APPLICATION STUDY:
SCE PLUS IN MBP COOLER

Date: January 2025

SUMMARY

Project: SCE25MNDX in 4-door supermarket cooler MBP food retail applications

Task: Replacing a scroll compressor with a reciprocating compressor in a glass door supermarket reach-in cabinet for better system efficiency and less noise.

STORY

Background

End customers need an increase in energy efficiency compared to the reference scroll compressor with better cabinet costs and without a negative impact on cooling performance. The solution must meet targets in terms of stability when cooling cabinet temperature and temperature recovery speed.

Challenges

Currently, there is no reciprocating compressor solution available on the market that can provide similar cooling performance as a scroll compressor with better size/weight (compact and cost-efficient solution).

The SCE25MNDX compressor still has a nominal lower cooling capacity than the reference compressor. The setup of refrigerant charge and expansion must be optimized to activate the full functional performance of the SCE Plus compressor.

Cabinet Type:
4-glass door supermarket air cooling reach-in cabinet
Input voltage: 230 V/50 Hz
Dimensions: 465 mm × 595 mm × 795 mm

Compressor Configuration	Scroll Compressor	Secop SCE25MNDX
Refrigerant	R290	
Displacement (cc)	32.9	25
Application conditions	MBP	MBP
Cooling capacity ASHRAE MBP (W)	3353	2062
COP ASHRAE MBP (W)	2.22	2.06
Height (mm)	387	238.5
Weight (kg)	21.5	14.2

OUTCOME

SOLUTION: Big display case cabinets often use small scroll compressors that provide a high cooling power compared to hermetic reciprocating compressors. That is why reciprocating compressors are normally used only in smaller cabinets.

The new SCE Plus series is the perfect replacement for small scrolls in LBP and MBP display cases. The scroll compressors provide much more cooling capacity than needed for operating conditions that occur during normal shop activities (e.g. frequent door opening). However, the high cooling performance of the scroll compressors has a small advantage in temperature recovery speed after reloading with warm goods.
With the Secop SCE Plus compressor solution, end users will not only benefit from better energy consumption but also gain other various advantages thanks to improved features: e.g. enhanced robustness, better operational costs, better component costs, and reduced noise, etc.

ENERGY CONSUMPTION: the new SCE25MNDX compared to the original scroll compressor

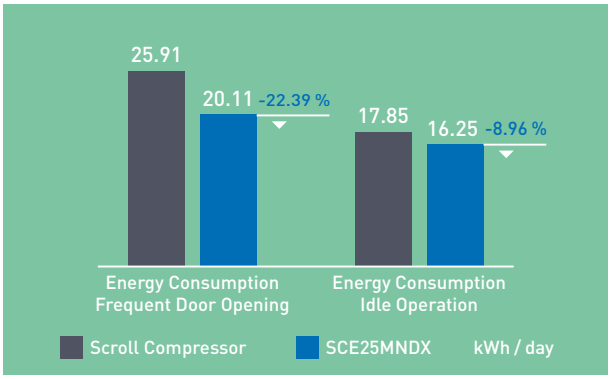
-22%
Frequent door opening

-9%
Idle operation

THE NUMBERS

Model	Scroll Compressor	Secop SCE25MNDX
R290 refrigerant charge (g)	149	149

Cabinet Performance 24-hour energy consumption (kWh/d)	Scroll Compressor	Secop SCE25MNDX
Frequent door opening (at Tamb 25°C)	25.91	20.11
Idle operation (stable at Tamb 25°C)	17.85	16.25



THE BENEFITS

- New Hermetic Terminal Plug
- Broad Application Range (LBP & MBP)
- Hot Gas Defrost
- Low Noise Low Vibration
- High Efficiency
- R290 Green Refrigerant

TAKE-AWAYS

First-class robustness
- Improved robustness for liquid return
- Increased stability during defrosting by hot gas
- Improved noise/vibration reduction compared to similar products

Optimized electrical system
- More compact, easier installation
- Additional connections
- Flexible configuration option

Innovative solution for flammable refrigerant

Patented new hermetic terminal plug, enhanced protection against potential contact with contaminants, thereby reducing the risk of connection damage.

Multiple conformity
- Natural refrigerant solution
- Low GWP at maximum capacity
- Regulatory compliance and environmentally friendly with R290

Learn more about the SCE25MNDX here:
https://lmy.de/PrytM

Try our PRODUCT SELECTOR

Direct Link

ABOUT SECOP

Secop is the expert for advanced hermetic compressor technologies and cooling solutions in commercial refrigeration.

Secop GmbH · Lise-Meitner-Straße 29 · 24941 Flensburg, Germany · Tel: +49 461 4941 0 · www.secop.com

Produced by Secop | January 2025