

SECOOP

2015

**ENERGY EFFICIENT
PROPANE PLUG-IN
CABINETS IN
DISCOUNT RETAIL
STORES**

— CASE STUDY





Energy efficient propane plug-in cabinets in discount retail stores

INTRODUCTION

Energy costs are high in Germany and in most other European countries, whereas sales margins in food retail are traditionally low. As a response to this situation, a system manufacturing company was approached by the market-leading grocery chains to supply a self-contained display cabinet that possesses higher efficiency than existing cabinets, to help improve margins. According to studies, refrigeration in standard grocery stores contribute 55% to the use of primary energy, so to have a high-efficiency refrigeration system was of the utmost importance for discount retail chains.

The system manufacturer teamed up with Secop – Danfoss Compressors at the time – as one of their main compressor suppliers to work on a cabinet according to the specifications given by the commercial end users. The product was a success and is now being adapted for the North American markets.

ABOUT THE SYSTEM

Self-contained display cabinets are very common among European discount food retailers as restricted floor spaces do not favor large centralized installations. The single plug-in cabinets can be quickly rearranged if standing alone or installed in an island setup to be accessed by the customers from both sides. They usually contain frozen and low-temperature chilled food, rather than dairy products.

As well as improved energy efficiency, the cabinets also required additional functions for their daily operation, including:

SECOP

Visit for more information

www.secop.com

Contact information

Pieter Boink

p.boink@secop.com

+49 461 4941 730

ABOUT THE COMPANY

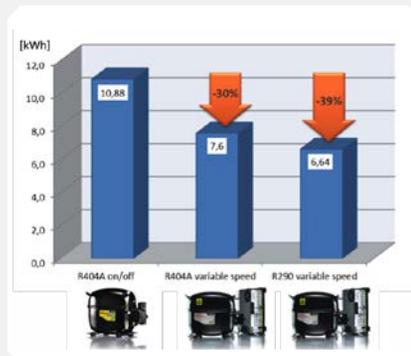
Secop is a German supplier of hermetic refrigeration compressors for domestic and light commercial appliances with a focus on systems using hydrocarbons as a refrigerant. Secop cooperated with a system manufacturing company to develop a plug-in display cabinet to help significantly reduce energy costs for discount food retail chains.

- » Hazard analysis and critical control point
- » Alarm to signal failures at set temperatures
- » Remote monitoring of temperatures and consumption levels
- » Automatic defrost to prevent accumulation of ice that increases energy consumption due to insulation effects
- » Control of lighting

To reduce energy consumption of the refrigeration cycle, Secop proposed to use an electronically controlled compressor that is able to adjust its rotating speed and therefore the cooling capacity. Secop's experiences with variable speed compressors have shown its potential to reduce energy consumption by up to 40% compared to a conventional compressor with a synchronous motor and fixed speed/cooling capacity running on/off.

RESULTS

Intensive tests in labs and in the field have shown solid savings in energy consumption. The table beneath shows the effect on the cabinet's energy efficiency using a variable speed compressor but with the fluorinated gas R404A. It was observed to use 30% less energy compared to the identical system using a fixed speed (on/off) compressor. However, with the additional change of utilizing R290 (propane) as a refrigerant, the cabinet's energy efficiency was improved by a further 9%.



Additional savings come from secondary effects, which include the scheduled (hot gas) defrosting of the cabinet and the full integration of application functions into one controller, such as fan and illumination control.

By adopting new compressor technology to a conventional application and tailor a solution for plug-in cabinets in discount retail stores; immense savings in total cost of ownership have been enabled and have become a major success for the system manufacturer with approximately 600,000 pieces in the market today.

SUMMARY

Secop is now adapting the controls for variable speed compressors for the North American market, i.e. for 115 Volt 50/60Hz. The demand will come from strengthened policy that requires compliance with more stricter energy regulations in the near future. The integrated controller for food retail cabinets is under development and will be released in 2015. The controller can be modified to suit all other cabinet types where the energy efficiency is a major buying criterion.





Get in touch with shecco's Market Development team to learn more about the market for natural refrigerants in North America or find out how we can help you in gathering market intelligence and proactively building your business with our tailored market development services, to get your technology faster to market.

Email us at

research@shecco.com

Talk to us on the phone

(202) 657-6164

Our mailing address

shecco America 570 Seventh Avenue, 18th Floor, New York, NY 10018 - USA

shecco Europe Rue Royale 15, 1000 Brussels, Belgium

shecco Japan Office 20 EGG JAPAN Shin-Marunouchi Building 10F Marunouchi 1-5-1, Chiyoda-ku 100-6590, Tokyo, Japan

This case study was published as part of '**GUIDE to Natural Refrigerants in North America - State of the Industry 2015**', which is available for download at

<http://publication.shecco.com/publications/view/guide-north-america-2015>

© 2015 shecco. All rights reserved.

sheccoMarketDevelopment 