

High
Efficiency
Solutions.

CAREL

CAREL & CO₂ Technology



Global Key Account Manager
Retail





1 CAREL

2 CO₂ Experience

3 Advanced CO₂ Technologies





1 CAREL

2 CO₂ Experience

3 Solutions for Retail -OEM



CAREL Head Quarters



CAREL Industries S.r.l.



CAREL Applico s.r.l.



Our Markets

Air-Conditioning
HVAC Control

Refrigeration
& Retail Control

Humidification &
Evaporative cooling



Your one global supplier of HVAC/R control solutions

Local production, world class quality, international support.



Our Value Proposition



HIGH programmability

Your powerful customized solution
Fully integrated
Easy connectivity



Top EFFICIENCY

DC inverter compressor & EXV integrated management
Refrigeration capacity continuous modulation with ultra-cap
Winter Humidification & Summer adiabatic cooling



Remote SOLUTIONS

Site control & alarm management
Process improvement
Offline data analysis (data mining)





1 CAREL

2 CO₂ Experience

3 Solution for residential application



CO₂ supermarket map EU



estimate: 1,200 - 1,500 transcritical supermarkets in the EU

verified: 1,000 stores

2011



CO₂ TRANSCRITICAL SUPERMARKETS IN EUROPE

DATA BY COUNTRY



2013



*These figures are based on a 2013 survey of trading system suppliers and retailers. Feel free to contact us to add your data to the map. Send an email to research@phoscon.com



CO₂ Continue to Grow



... our CO₂ experience ...



CAREL Retail Sistema

Your control solution provider for CO₂ systems

pRack platform

pR300T: CO₂ transcritical compressor rack controller

pR300: CO₂ subcritical compressor rack controller

Chillbooster

Evaporative cooling

pCOS+

Air conditioning solutions



MPEPRO - iV systems

Show cases solutions

Service
boost your service

Leakage sensor

pChase
Lighting solution

pLoads
Energy solution

nomologpro

PWPRO - PVPRO

Supervisory solutions

1973 **40** 2013

40°



... our CO₂ experience together thus far...



 FairPrice

 NETTO

 Sobeys Better food for all.

 LIDL

 SUPERVALU.

 Albertsons

 IGA

 kangaroo Supermercanti

 TESCO

 Carrefour

 ALDI

 Pick n Pay

 UNIDO

 Walmart
Save money. Live better.



 Nestlé Good Food, Good Life

 Sainsbury's

High
Efficiency
Solutions.



 CAREL

CAREL CO₂ Experience



CAREL & CO₂

- We are present in the first Transcritical store in Southern Hemisphere, awarded by COOLword for the “refrigeration installation of the year”.



COOLworld

CAREL Marketing News

CO₂-only refrigeration system driven by CAREL retail sistema wins the COOLworld award

“The partnership with Green Cooling Council obtains the prestigious prize for the “refrigeration installation of the year””

Headquarters ITALY

CAREL S.p.A.
Via dell'Industria, 11
35030 Brugine - Padova (Italy)
Phone: (+39) 0499 716611
Fax: (+39) 0499 716600
marketing@pdp.carel.com
carel.com - www.carel.com

Subsidiary

CAREL Australia Pty Limited - Head Office (Sydney)
PO BOX 6808, Silverwater Bus Ctr, NSW 1511
Phone: (+61)-0-2-8762 9200
Fax: (+61)-02-8764 6833
au.carel.com - www.carel.com.au

green cooling council

HILL EQUIPMENT

refrigeration installation of the year, sponsored by:



CAREL CO₂ Experience

bringing you the R744 news of tomorrow

NEWS > PRODUCT NEWS

Coming Soon: CAREL Retail sistema is CO₂ ready

R744.com - 2009-09-09

Rate: ☆☆☆☆ Results: ★★★★★ 0 Comments | Add to profile

The global supplier of HVAC&R solutions has developed a series of innovative components for CO₂ retail systems. Among the products to be featured on R744.com soon are several lines of integrated controllers, expansion valves, controllers for electronic valves, and supervisors.

The Italy-based manufacturer of control systems for the retail market has developed a wide range of energy-saving solutions within its "CAREL retail sistema". This solution for the commercial refrigeration market optimizes and significantly improves the installation's management, focusing specifically on enhancing the refrigeration cycle's performance. Data confirmed by independent research councils and by worldwide supermarkets operating with CAREL's system have proved an average drop in energy consumption of 25%, with peaks of 48%, when using "retail sistema".

Five products out of the complete retail sistema package solution will be presented on R744.com soon. The displayed components will cover integrated controllers for multiplexed showcases and cold rooms, controllers for electronic valves, rack controllers, expansion valves, and a new generation of supervisors equipped with monitoring and energy saving management functions. All products feature easy and safe installation, compactness and cost-effectiveness, as well as advanced usability functions and interfaces. They are designed to fit the most advanced CO₂ subcritical and transcritical refrigeration systems operating in a wide range of climate conditions.

Awarded CO₂ system in Australia

CAREL's innovative solution was successfully applied in Australia's first transcritical CO₂ supermarket. Operational since December 2007, the "Drakes Supermarket" system has been running smoothly even at outside temperatures of 40°C. A major success factor of the system, able to reduce the site's carbon footprint by 65% compared to a conventional refrigeration system, is CAREL's cutting-edge series of controllers, valves, and supervisors. Last April, the CO₂-only retail system was recognized as the "Refrigeration Installation of the Year 2008" at Australia's largest trade show for the Air Conditioning, Refrigeration, and Buildings Services sector. The prestigious prize underlines CAREL's focus on energy savings and environmentally benign solutions.



bringing you the R744 news of tomorrow

NEWS > PRODUCT NEWS

Australian CO₂ system wins CoolWorld Award

R744.com - 2009-05-06

Rate: ☆☆☆☆ Results: ★★★★★ 0 Comments | Add to profile

Australia's first CO₂ transcritical supermarket has been recognized as the "Refrigeration Installation of the Year" at a major trade show late April.

The country's first transcritical supermarket refrigeration system running on CO₂ only was awarded with the "GreenWorld Industry Award" as part of the Biennial Air Conditioning, Refrigeration and Buildings Services (ARBS) Trade Show on 21 April. In a ceremony attended by more than 300 experts from the RAC industry, the installation was recognized as a major step towards reducing the industry's carbon footprint. Both the project initiator, the Green Cooling Council, as well as the Drakes Foodmarket using the system, and its contractor Hill Equipment, were awarded with the prize initiated by the "Climate Care Australia's major monthly publication for the refrigeration and air conditioning industry would need to live up to its promise to "leave no stone unturned environmental footprint," Potter said.

Overall, observers agreed that since Australia's trade show ARBS has attention exhibitors give to CO₂ and other natural refrigerants has great significant level.

About the Angle Vale Project

The first transcritical CO₂-only system installed in the Southern Hemisphere five months in the Angle Vale Drake supermarket in Adelaide. So far, it reliably in worst summer conditions of up to 40°C, combining reduced cost effectiveness.

shecco publications

GUIDE UNIDO 2013 - Natural Solutions for Developing Countries

Published: 18 November 2013
Lead authors: Nina Mason, Marc Chasseron, Huijing Jia, Silen B. S. 103
Number of pages: 58

The United Nations Industrial Development Organization (UNIDO) and shecco have published a GUIDE supporting the transition away from ozone-depleting substances to natural refrigerants and foam-blowing agents. It presents results from the UNIDO ATMosphere Technology Summit, from global surveys, and 50 case studies.

Cost details
Total price: free
Total items: 1
Multi-user license: free

Contact us
shecco Market Research team
Nina Mason
Head of Market Research
• e-mail: research@shecco.com
• e-mail: europe@shecco.com
• phone: +32 2 230 3700

Share publication
Download
GUIDE UNIDO 2013 - Natural Solutions for Developing Countries (3.83 MB)

Special supporter
UNIDO

Supporters
CAREL MAYEKAWA

High Efficiency Solutions.



CAREL

CAREL CO₂ Experience



- We developed a dedicated CO₂ convenience software package for Tesco Express in England a CO₂ software for the complete management of the system:
 - ✓ compressors rack
 - ✓ Gas Cooler pressure optimization
 - ✓ Heat Reclaim

The system worked for more than 6 months in laboratory after which the rack was installed in a real convenience supermarket.



CAREL CO₂ Experience



Figure 01: Detail of the refrigeration racks from the CO₂ Technology & Training Center of Bitzer Brazil.

Bitzer Brazil has inaugurated the 1st CO₂ Technology & Training Centre of the Americas in Sao Paulo complete managed by CAREL Retail Sistema





Americas novelty:
CO₂ TECHNOLOGY & TRAINING CENTER



Bitzer Brazil inaugurates the first CO₂ Technology & Training Center of The Americas in its plant in Sao Paulo.

by Alexandre da Silva - Application Engineer - Bitzer Compressores Ltda
alexandre.silva@bitzer.com.br
Fone: 05 11 4617-9136

January/2009





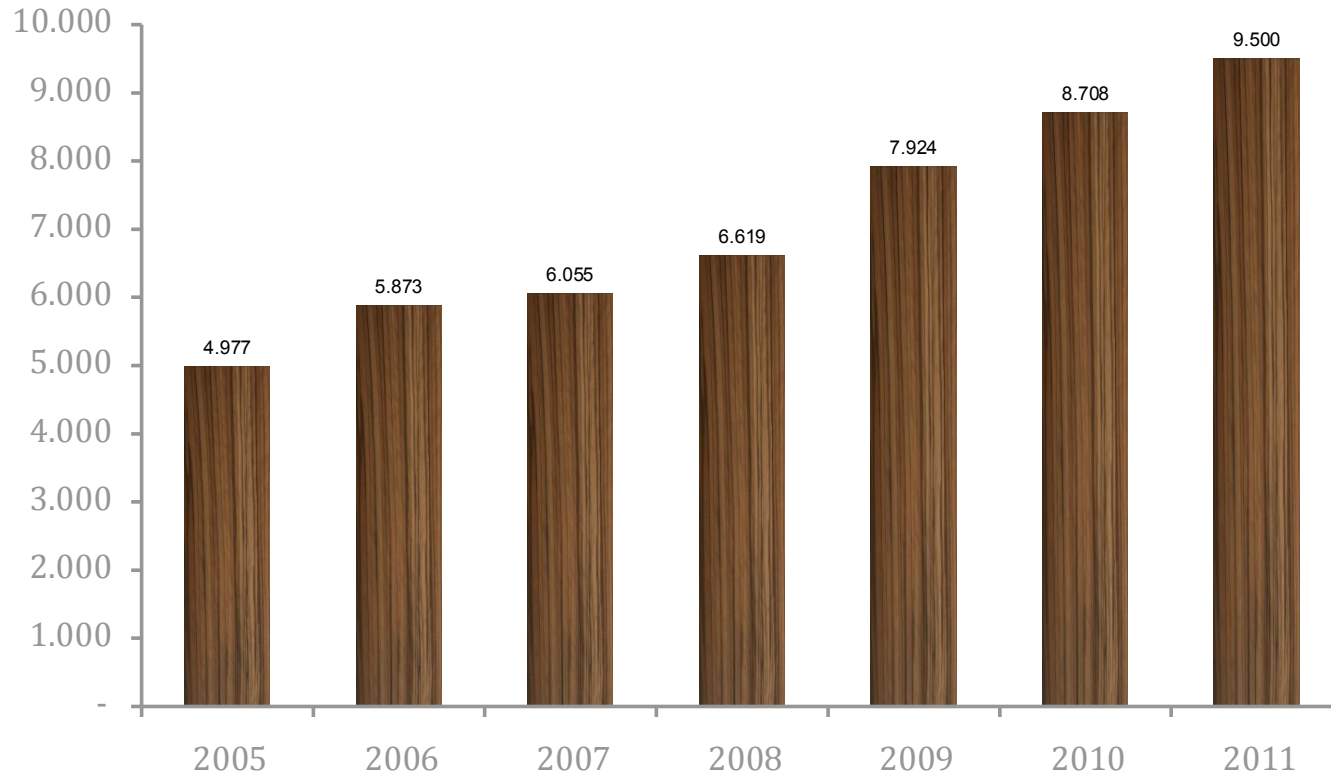
1 CAREL

2 USA operations

3 Advanced CO₂ Technologies



R&D Investments (Euro x 1'000)



Advancements in CO₂



Warm Climates

- Parallel Compression

Integrated CO₂ Systems

- Refrigeration
- Heating
- Cooling

Ejector Systems

- Increase in Efficiency

Defrost Systems

- Hotgas Defrost



Warm Climates

PARALLEL COMPRESSOR

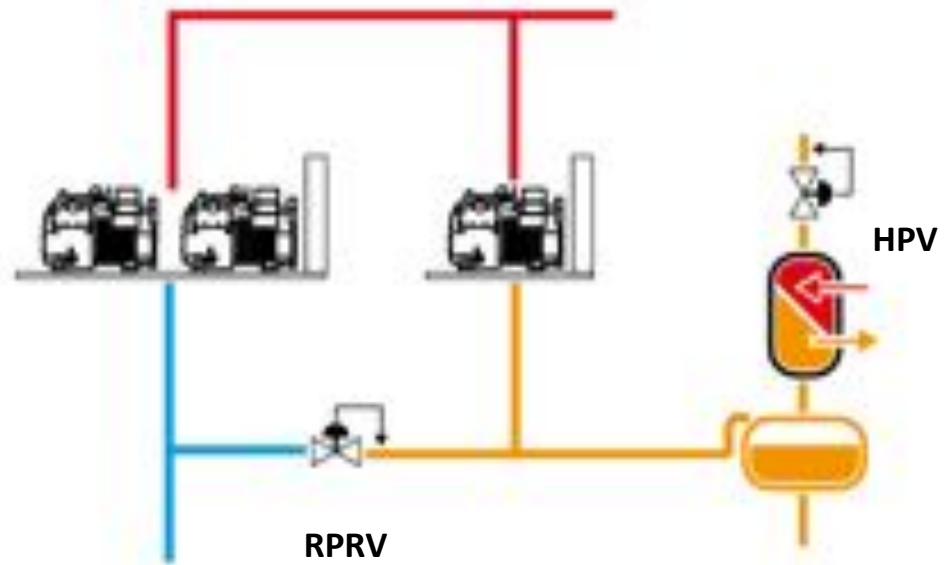
Receiver pressure regulation
Flash gas valve synchronization

Flash gas by pass valve need to cover

- Compressor regulation gaps
- Compressor timings

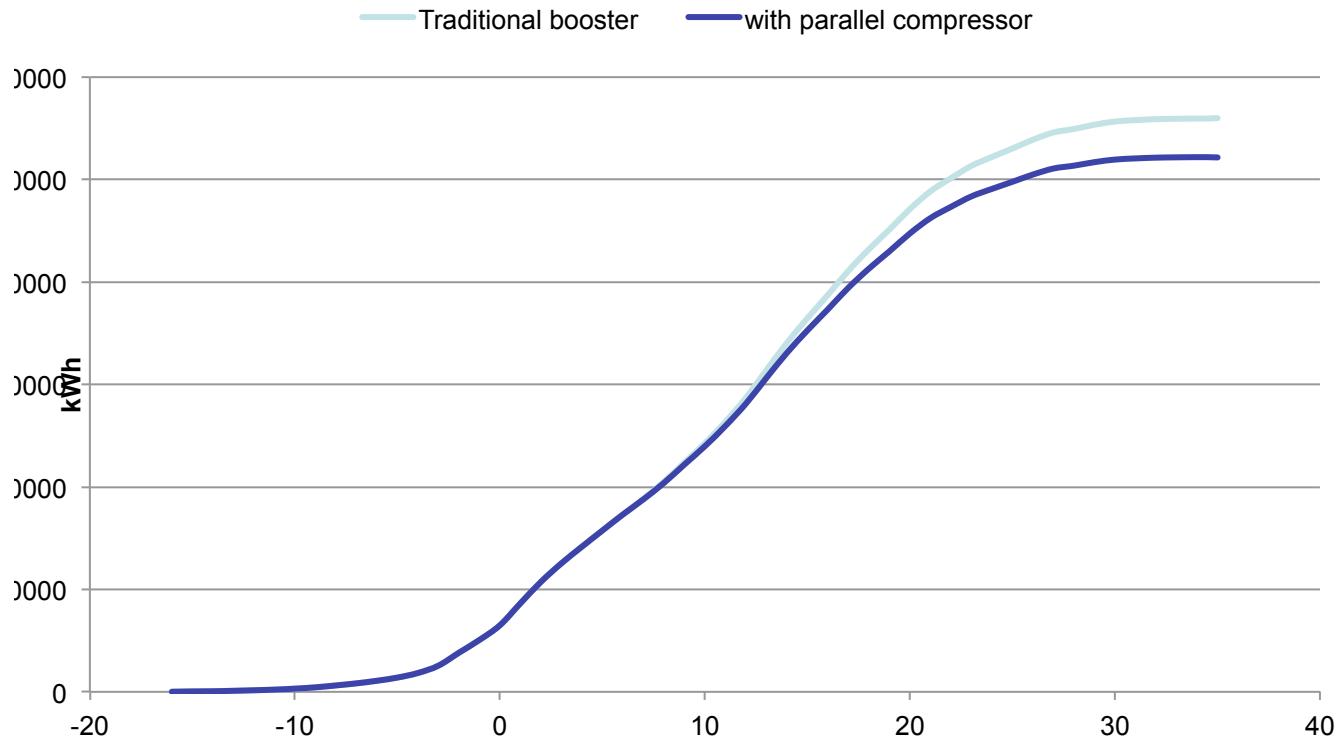
Flash gas by pass reduction
Higher efficiency for high gas cooler pressure

Higher efficiency at higher external temperature



Warm Climates

Energy absorption (1 year)



CO₂ Integrated Systems



Single compressor rack able to supply

- Refrigeration utilities
- Air conditioning
- Hot water request



Integrated Solution

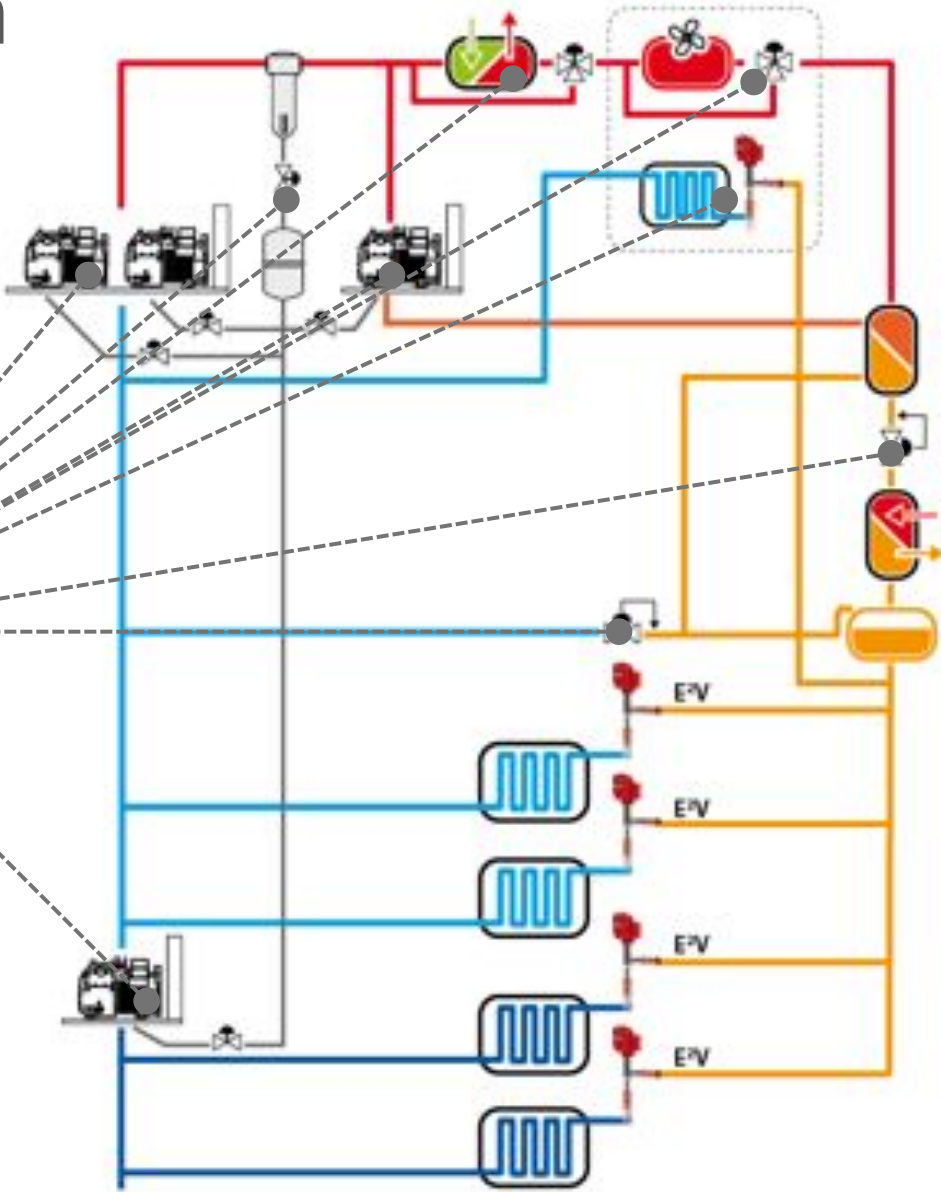
- Full control of the whole machine in one single device
- Deep synchronization within the different parts



- Self adaptation of working condition to maintain system requests



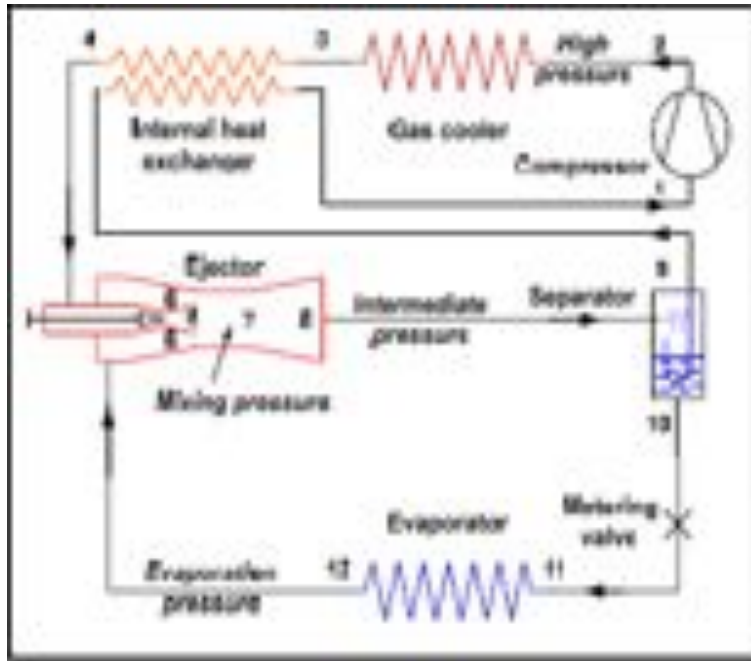
Usability increase due to uniques access and control



CO₂ Ejector Technology

Research results today demonstrate that applying CO₂ Transcritical ejector in the system is one of the promising methods to increase the system efficiency. In addition, ejector simplicity (no moving parts) construction comparing to expanders, low cost and reasonable efficiency make it closer to practice.

- Invented by Gay in 1931
- Early stages in implementation
- COP Improvements + 18%
- Increased cooling Capacity +5%



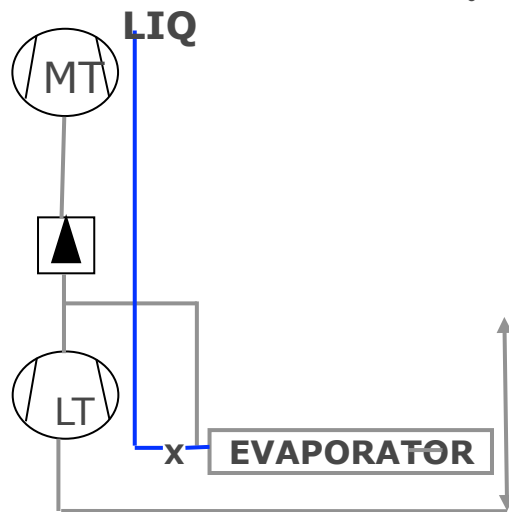
One Example



CO₂ Hot Gas Defrost



- Additional benefits which CO₂ systems deliver is utilisation of useful heat.
- Integrated management of HP valve during the defrost requirements.
- Swift short defrost duration
- Longer stock life & case performance





*“we recognise environmental issues
as a corporate priority”*

Thank You

Integrated Control Solutions & Energy Savings