

# *Solutions for small footprint CO<sub>2</sub> installations*

*Matteo Valerin*



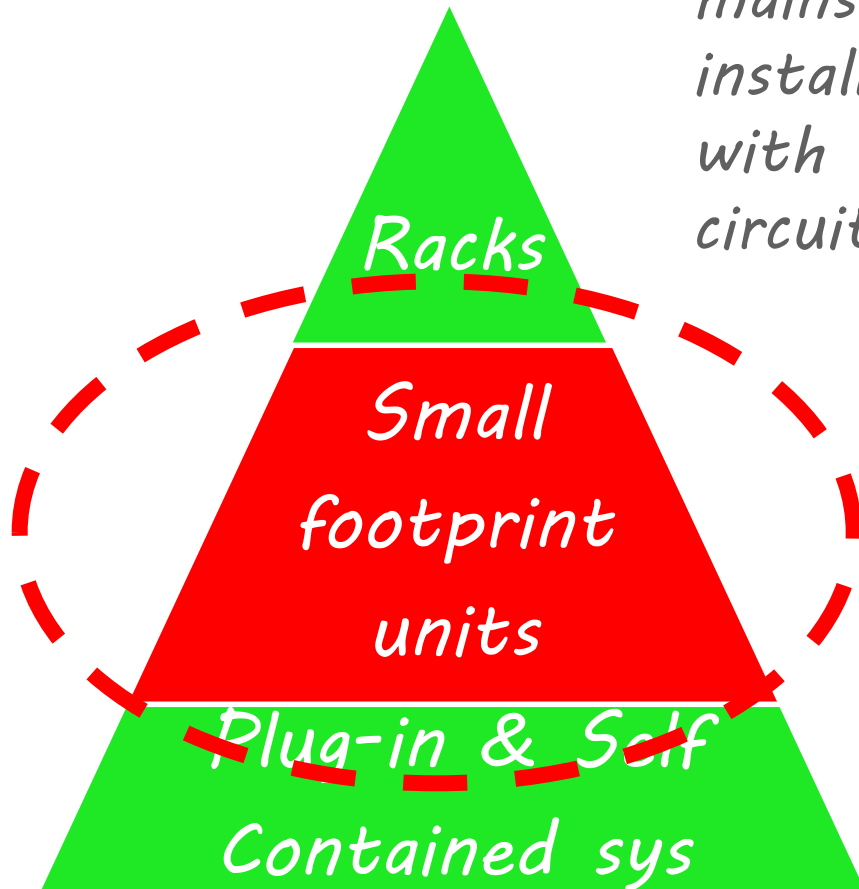
solutions for europe

**natural refrigerants**

15-16 October 2013, Brussels

# CO<sub>2</sub> as main refrigerant...

CO<sub>2</sub> technology is becoming mainstream in medium to large installations or into appliances with self-contained refrigeration circuit



In the lower market segment for centralized sys there is a large number of small and simple installations, where CO<sub>2</sub> strives to be adopted

# Barriers in the small installations



Whenever compared with the conventional systems the use of  $\text{CO}_2$  as primary refrigerant faces some barriers to be widely adopted in the small installations, mainly for:

- Extra investment cost
- Usability for installers
- System added complexity

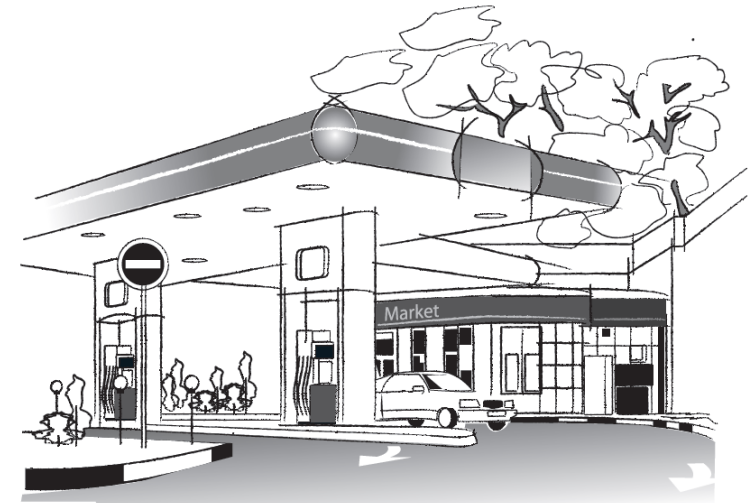
CAREL solution helps the R744 Condensing unit to tackle the both in terms of a simple system and intuitive control & valves solutions to ensure an optimal and sustainable operation



# The application



*extra small convenience & mini stores*



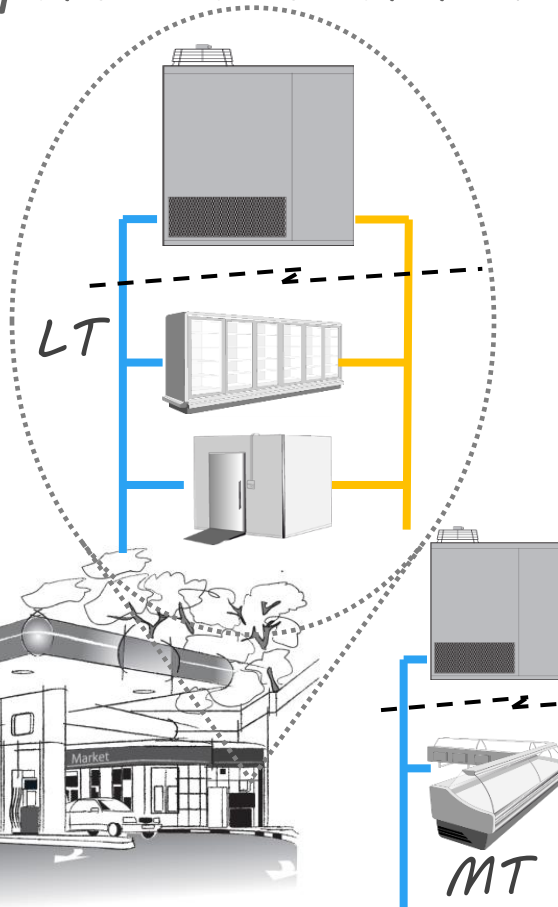
*petrol stations*



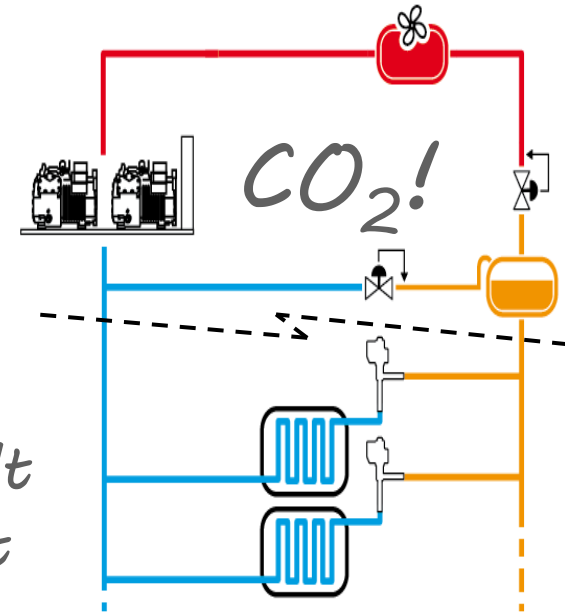
*Simple or just cooling units...*

# The application

From the traditional “Condensing Unit” to the small footprint transcritical CO<sub>2</sub> unit...



- One or more condensing unit per site
- Single temperature unit
- Simple and compact unit
- Sometime result of a subsequent installation

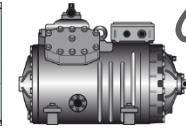


# The Unit controller

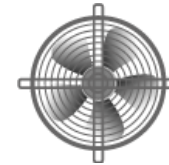
## pRack pR100T Compact



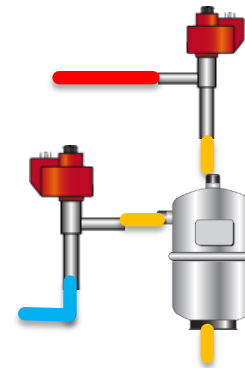
- Compact: just 105mm width
- Easy: Built-in graphic display allowing easy setup and service
- Complete unit management (incl. protections, alarms...)
- Ready for expansion for communication with Monitoring sys, etc...



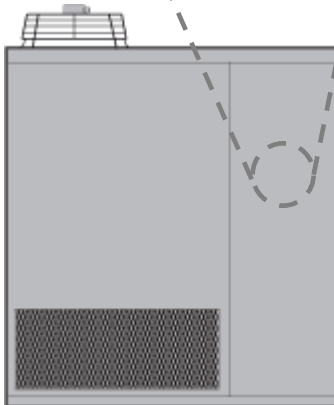
Compressor(s)  
management



Gas Cooler  
management



High pressure  
and receiver  
pressure  
valves direct  
management



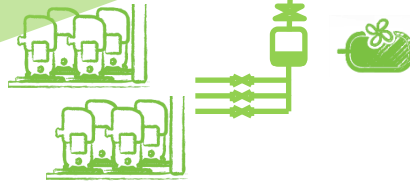
# pRack Transcritical family

pR300T medium and large

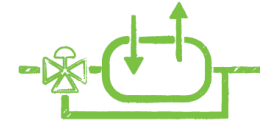
pR100T Compact



- Gas Cooler
- (HPV - RPRV)
- Compressor



- More Comp in 2 lines
- DSS
- Oil



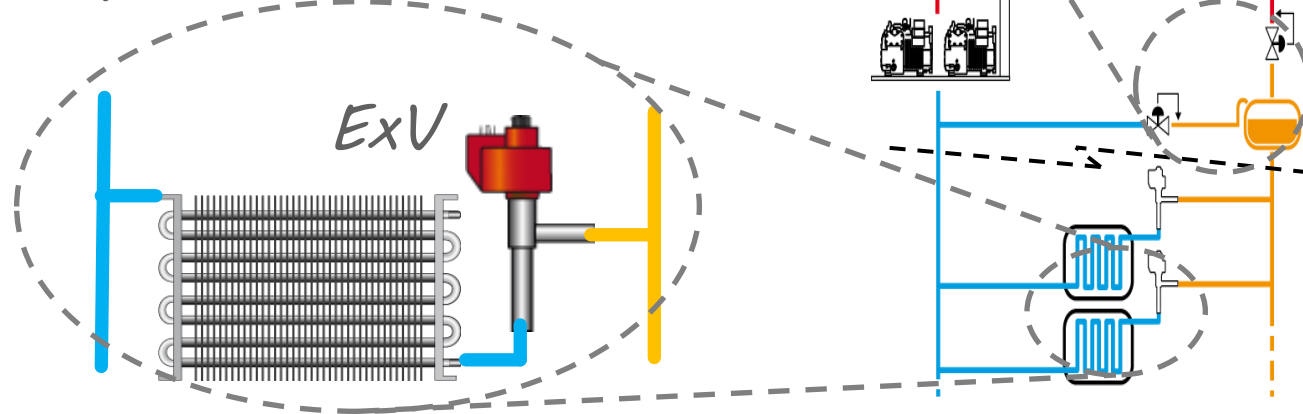
- Heat recovery
- Subcooler
- Built-in fail safe
- Parallel Compression
- Custom features
- ...



# E2V High Pressure



- Proportional Stepper Valve
- Dedicated to CO<sub>2</sub>
- Max Operating Pressure 140 bar
- Compact design for an easy fitting into the unit
- Suitable as ExV in the evaporators, also as HPV and RPRV up to 40KW units

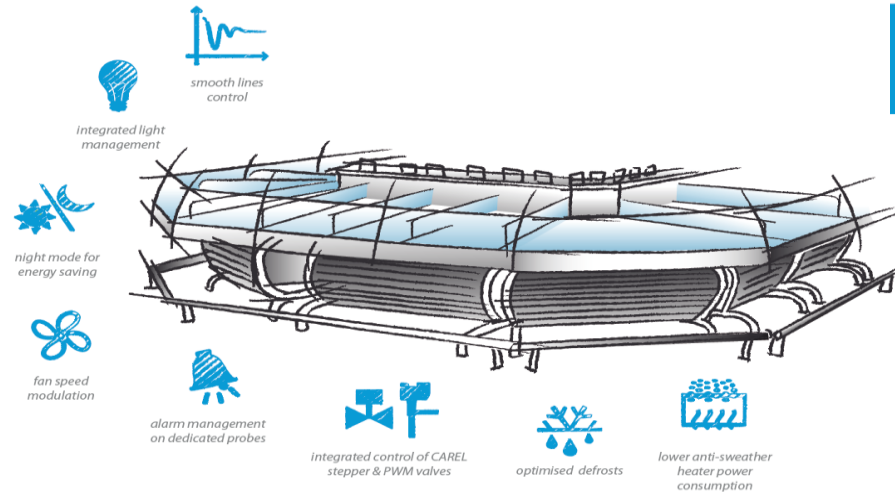
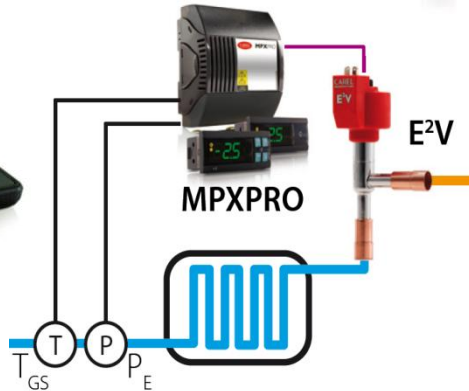




# Showcase/ColdRoom Controller

## MPXPRO

- Compact controller for the complete management of single, multiplex showcase and coldroom units
- Built-in driver for the ExV with Ultracap technology
- Wizard for fast config. and Remote controller



# Ultracap Tech built-in



- Compact Emergency Power Supply device for Electronic Valves
- Use EDLC Ultracapacitor technology
- Reliable and Green: No battery
- Designed to give 10 years' trouble-free operation without periodical checks or replacements
- Built-in on the pRACK and MPXPRO

  **built-in driver**  
with Ultracap Tech.



# Compact Monitoring System

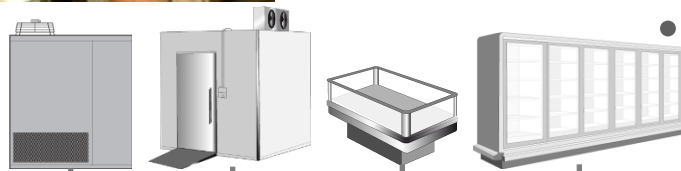


## PlantWatchPRO:

- Compact and simple wall mounting monitoring system, available also as simple panel mounting version
- Touch screen 7"
- USB Port, SD Card Slot
- Easy and simple Graphs, reports, email sending
- WEB server, accessible from PC or tablet just with an internet browser



Touch!



Modbus / Carel



# CAREL Retail Sistema

## Your control solution provider for CO<sub>2</sub> systems

### pRack platform

**pR300T:** CO<sub>2</sub> transcritical compressor rack controller

**pR300:** CO<sub>2</sub> subcritical compressor rack controller

### Chillbooster

Evaporative cooling

### pCO5+

Air conditioning solutions



### MPXPRO - E<sup>2</sup>V sistema

Show cases solutions



Leakage sensor

### pChrono

Lighting solution

### pLoads

Energy solution

remotepro

### PWPRO - PVPRO

Supervisory solutions



High  
Efficiency  
Solutions.

**CAREL**  

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