

# CO<sub>2</sub> READY



## CAREL Marketing News

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**space.**  
engineering services

## Transcritical CO<sub>2</sub> store managed by CAREL retail sistema

Starting since February 2008 a new TESCO UK store in Hinckley, Express format, has been working with a transcritical CO<sub>2</sub> system fully managed by CAREL.

CAREL and Space Engineering as suppliers are fully committed to energy savings and reducing environmental impact.

Carbon footprint reduction is becoming more and more important for global enterprises, which is why TESCO commissioned this new project.

CAREL co-operated with Space Engineering to develop a single controller capable of managing the compressors, gas cooler, heat recovery and high pressure valves that optimise system operation.

Thanks to the direct co-operation of CAREL UK, the project has been a complete success in terms of:

- right "first time" specification
- developed in, less than one month
- on-site deployment



The project started in July 2007 and within one month CAREL developed new software to fully manage the CO<sub>2</sub> rack. Thanks to the knowledge and know-how of Space Engineering we defined the specifications required to develop the new algorithms and control strategies: compared to other solutions, we combined up to seven controls in just one pCO (the CAREL solution for flexible control logic development).

The solution developed is capable of managing:

- Compressor control and staging;
- Oil Cooling;
- Oil Level and distribution;
- Heat Recovery;
- Gas Cooler Back Pressure valve;
- Low side vessel Back Pressure.

**Oil cooling**

- Air cooled (fans)
- Oil cooled (liquid CO<sub>2</sub> plate exchanger)

**Oil level and distribution**

Maximum and minimum separator/receiver level control and compressor oil recovery.

**Heat recovery**

System efficiency booster when engaged (time bands or enabled by digital input).

**Gas Cooler Back Pressure valve (VBP1)**

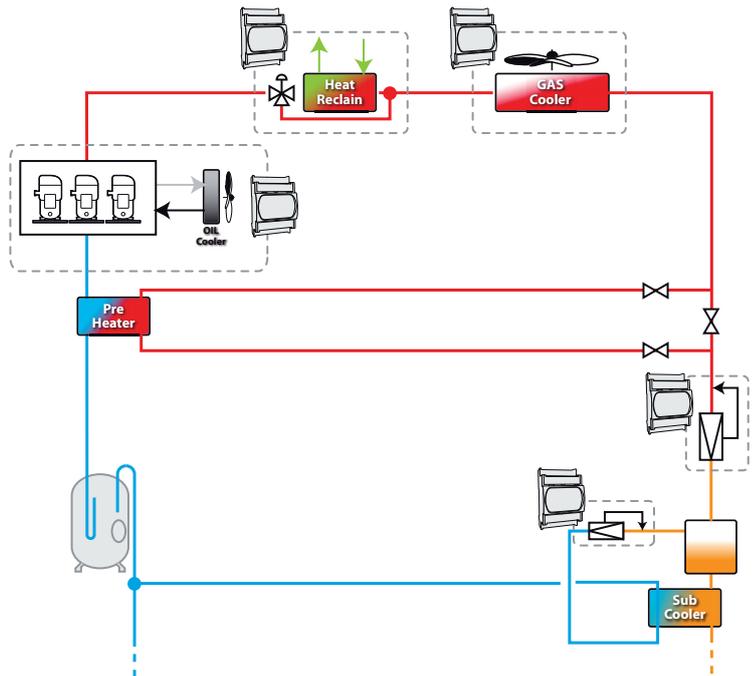
Smart algorithm for gascooler pressure control. Transcritical-subcritical transition control, flexible control.

**Low side vessel Back Pressure (VBP2)**

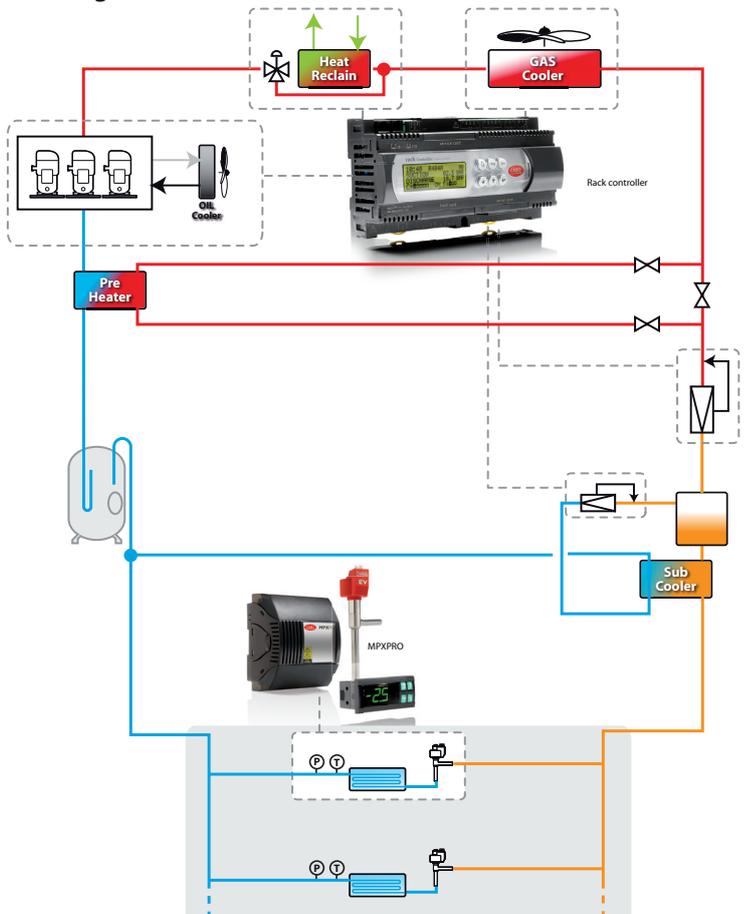
Vessel pressure control to keep low pressure side within design pressure values.

CAREL would like to thank Space Engineering for this challenging opportunity, completed together with excellent results.

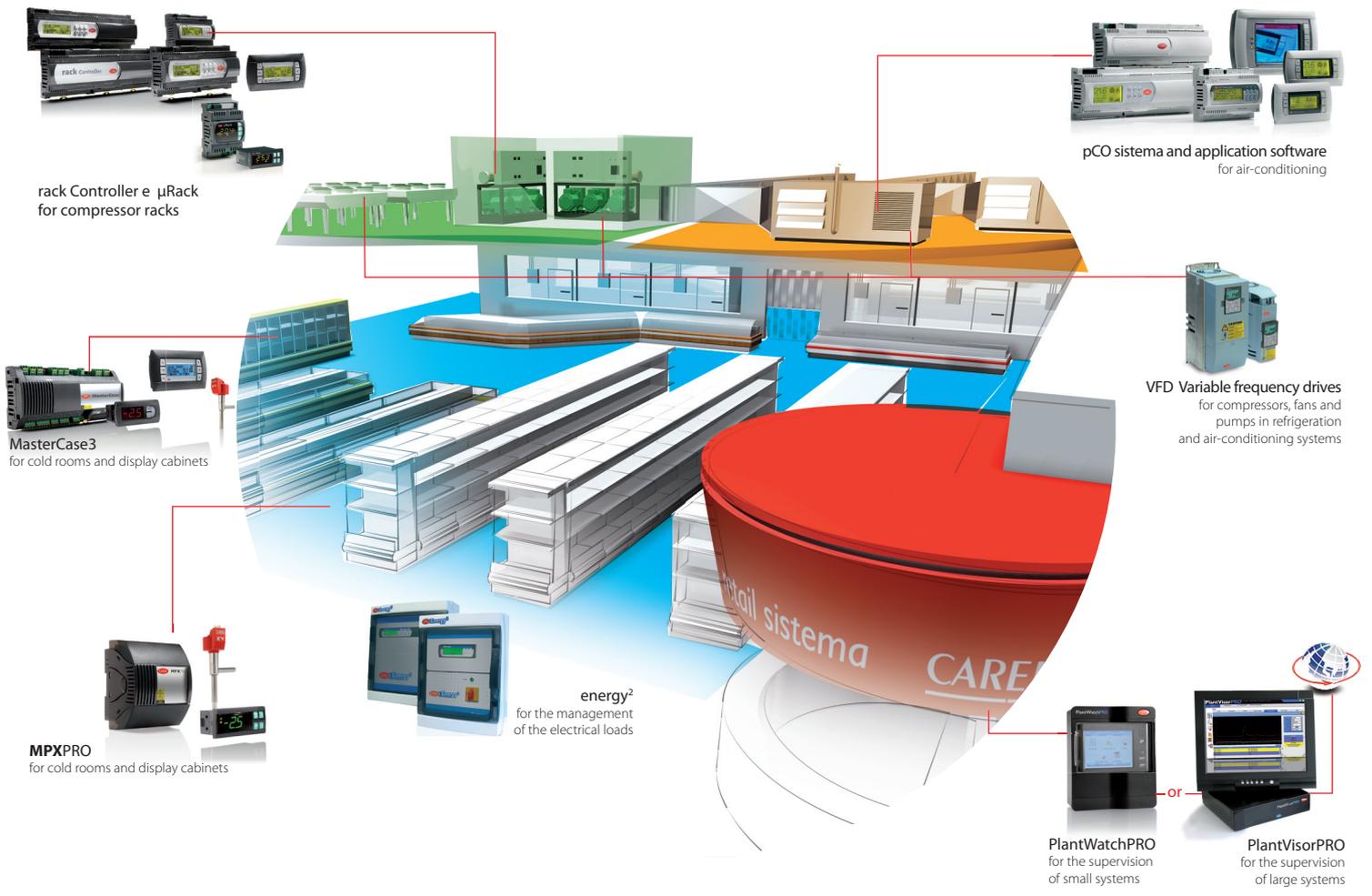
**Previous Solution**



**New Integrated Solution**



# retail **sistema** the one solution



## integration

retail sistema meets all requirements for the control, integration and supervision of food refrigeration and ambient air-conditioning systems. retail sistema can be integrated with third-party instruments.



## energy savings

retail sistema ensures significant reductions in energy costs for refrigeration and air-conditioning.



## optimised management

retail sistema responds to the market requirements for the improvement of global system management in mass retail applications.



## alarm management

retail sistema detects and signals all alarm situations. The solutions for systems and service centers interact for efficient management of maintenance and service operations.



## standards compliance

retail sistema guarantees compliance with the safety standards on the control and management of cooling.



## reduced environmental impact

retail sistema applies solutions that ensure lower energy consumption and less polluting emissions. Moreover, customers who are more sensitive to environmental issues can reduce their carbon footprint.

### Retail documentation

- CAREL retail sistema (+302240481)
- PlantVisorPRO (+302239351)
- Solution for compressor rack (+302239391)
- Solution for show case and cold rooms (+302239431)

### Reference web site

- TESCO (<http://www.tesco.com>)
- CAREL UK (<http://www.careluk.co.uk>)
- SPACE ENGINEERING SERVICES (<http://www.space-engineering.co.uk>)

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[www.carel.com](http://www.carel.com)

### CAREL Australia

[www.carel.com.au](http://www.carel.com.au)

### CAREL China

[www.carel-china.com](http://www.carel-china.com)

### CAREL South Africa

CAREL Controls S.A. (Pty)  
[www.carelcontrols.co.za](http://www.carelcontrols.co.za)

### CAREL Deutschland

[www.carel.de](http://www.carel.de)

### CAREL France

[www.carelfrence.fr](http://www.carelfrence.fr)

### CAREL Ibérica

Automatización y Control ATROL S. L.  
[www.carel.es](http://www.carel.es)

### CAREL India

CAREL ACR Systems India (Pvt) Ltd.  
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