



retail sistema

CAREL Marketing News

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BITZER
G·R·O·U·P O·F C·O·M·P·A·N·I·E·S

BITZER CO₂ laboratory and training centre managed by CAREL

CAREL Retail Sistema manages the first installation and training centre in the Americas to use CO₂ as the refrigerant fluid, located in Sao Paulo (Brazil).

Bitzer Brazil has created a new laboratory for the purpose of promoting the use of new technologies for commercial refrigeration, such as the use of carbon dioxide.

The lab features the more innovative solutions for energy saving and environmentally compatible development available on the market, both in terms of control logic and technology.

CAREL has contributed to this new development by supplying all the system management and control devices.

For some time now Bitzer Brazil has been training qualified personnel, providing extensive theoretical and practical information on new and standardised system solutions. These 5 day courses are repeated throughout the year in different languages (Portuguese, Spanish, English), and are held at the company offices in Cotia (Sao Paulo), involving both refrigeration technicians and engineers from all over Latin America.

The aim of these courses is to provide the most complete and extensive training possible, on both how to design and build an installation, and the new technologies and types of innovative systems that are already available for installation.

The new laboratory is therefore above all a training centre, being the first in the Americas to use CO₂ as the refrigerant fluid.

The installation includes three cold rooms, two medium temperature and one low temperature, each of which features three evaporators.

The heat exchangers operate on R22, R404a and CO₂.

The units operating on R22 and R404a are fitted with dual technology, that is, are installed with electronic and thermostatic expansion valves in parallel.

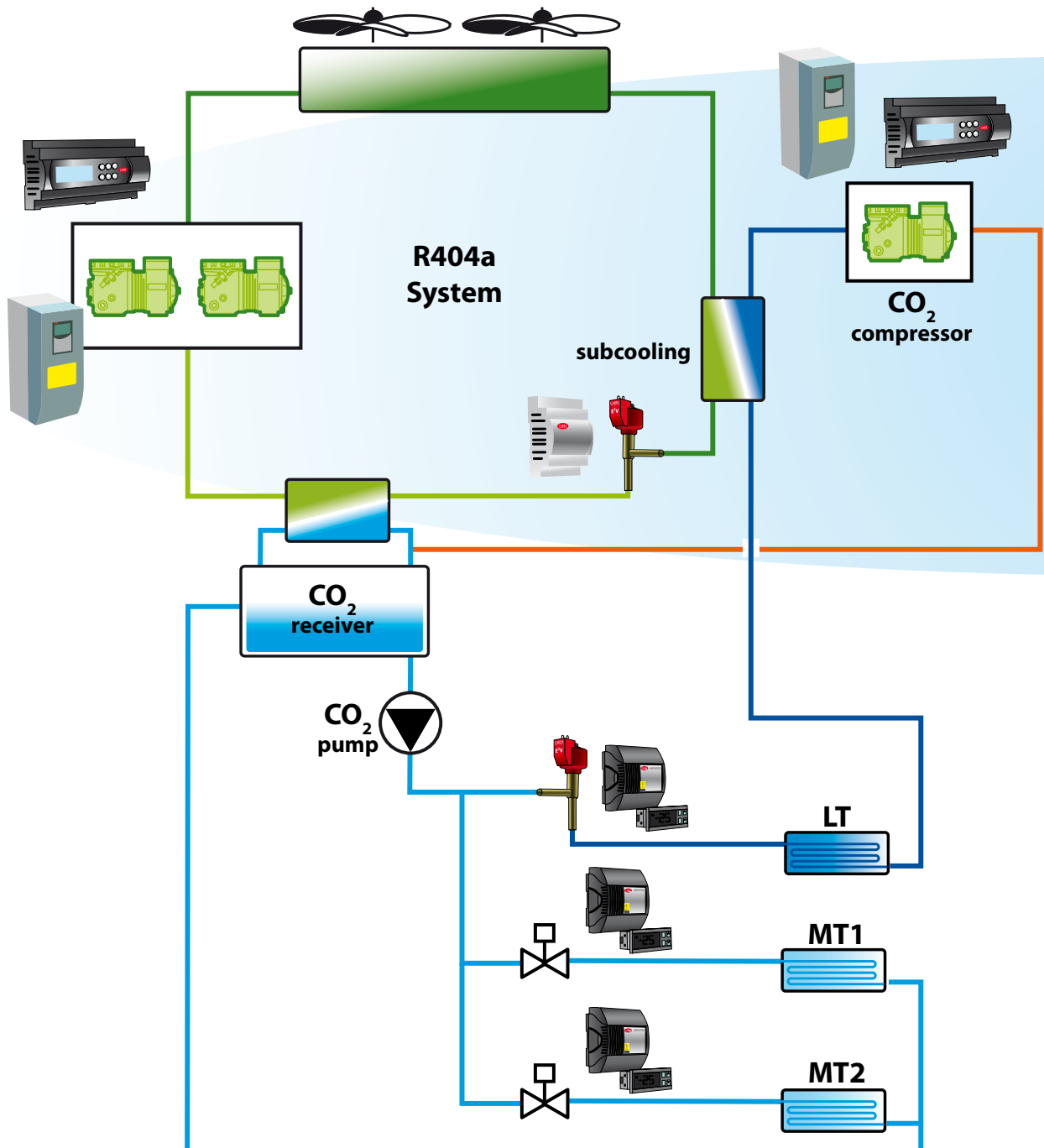
The carbon dioxide system is made up of a chiller that keeps the CO₂ at low temperature (-10°C), and pumps it to the medium and low temperature units.

The medium temperature units in this case do not require an expansion device, while the inlet of the low temperature unit is fitted with an electronic expansion valve (thermostatic valves cannot be used with CO₂), which takes the temperature of the fluid to -35°C; at the evaporator outlet the refrigerant is then compressed and subsequently condensed by the chiller.

The CO₂ setup is thus a mixed system: secondary fluid (MT), cascading (LT).



CO₂ condenser





PlantVisorPRO

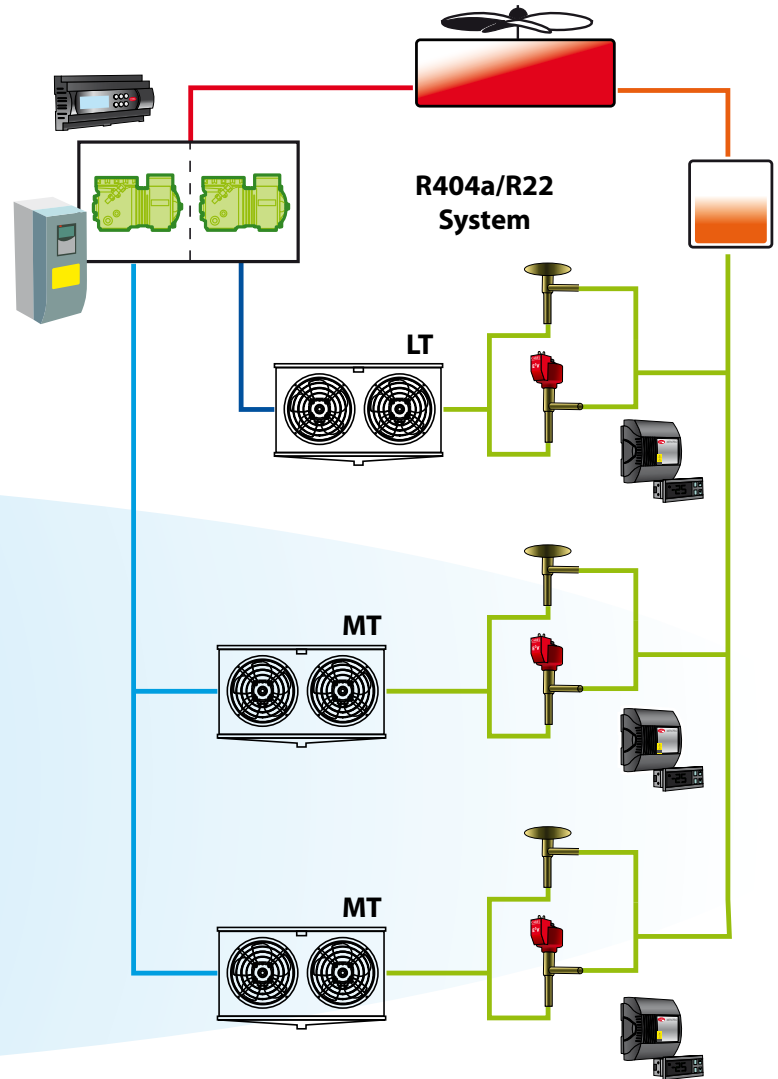


R22, R404A & R744 compressor racks



Dual technology, EEV - TEV

The laboratory also features other more or less innovative solutions for comparison and analysis of the pros and cons of the different control logic and technologies used. Moreover, the energy efficiency of conventional direct expansion systems on R22 and R404a can be compared against the CO₂ system.



CAREL supplied all the control devices that manage the installation:

- PlantVisorPRO supervisor for system management and optimisation
- pCO rack for management of the compressor racks
- MPXPRO for management of all the units and technology switching
- VFD inverters:
 - each compressor rack has one compressor managed by inverter;
 - CO₂ pump
- E²V electronic valves:
 - MT units (R22, R404a)
 - LT units (R22, R404a, R744)
- EVD for CO₂ condenser control
- Temperature and pressure probes

The close collaboration between Bitzer Brazil and CAREL has led to the development of the first solution on the South American market that uses carbon dioxide (natural fluid) as the sole refrigerant.

Reference literature:

- CAREL retail sistema (+302240480)
- PlantVisorPRO (+302239350)
- Solution for compressor racks (+302239390)
- Solution for showcases and cold rooms (+302239430)
- Solutions for the use of CO₂ in commercial refrigeration (+402200160)
- Integrated CO₂ system with pumping unit and direct expansion (+402200180)

Reference websites:

- CAREL (www.carel.com)
- Bitzer Brazil (www.bitzer.com.br)
- Information on CO₂ (www.R744.com)



integration

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



energy saving

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



optimised management

retail sistema responds to market requirements for the optimisation of global system management in large retail applications.



alarm management

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



standards compliance

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



reduced environmental impact

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

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