

CO₂ APPLICATION



CO₂ APPLICATION

Environmental concerns about the potential direct emissions from refrigeration systems based on synthetic fluid and EU legislation are driving the market towards higher efficiency and lower greenhouse gas emissions.

Castel is actively involved on this process to study and develop the right components and solution to support these trends.

As a green alternative, one possible solution to this demand could be covered by Carbon Dioxide (CO₂), due to its good thermodynamic performance, no-toxic and no-inflammable characteristics.

The specific properties of CO₂ require technical changes in the design of the refrigeration system. Castel proposes a complete range of products opportunely developed, tested and produced to be suitable with the characteristic of CO₂ systems and its coolant pressure.

Green, efficiency and cost less are pushing the research, unlike most other refrigerants, for different application solutions. In the practice the CO₂ in the market is applied in the following refrigerant cycles:

- **Subcritical** (cascade systems).
- **Transcritical** (CO₂- only systems).
- **Secondary fluid** (CO₂ used as heat transfer fluid).

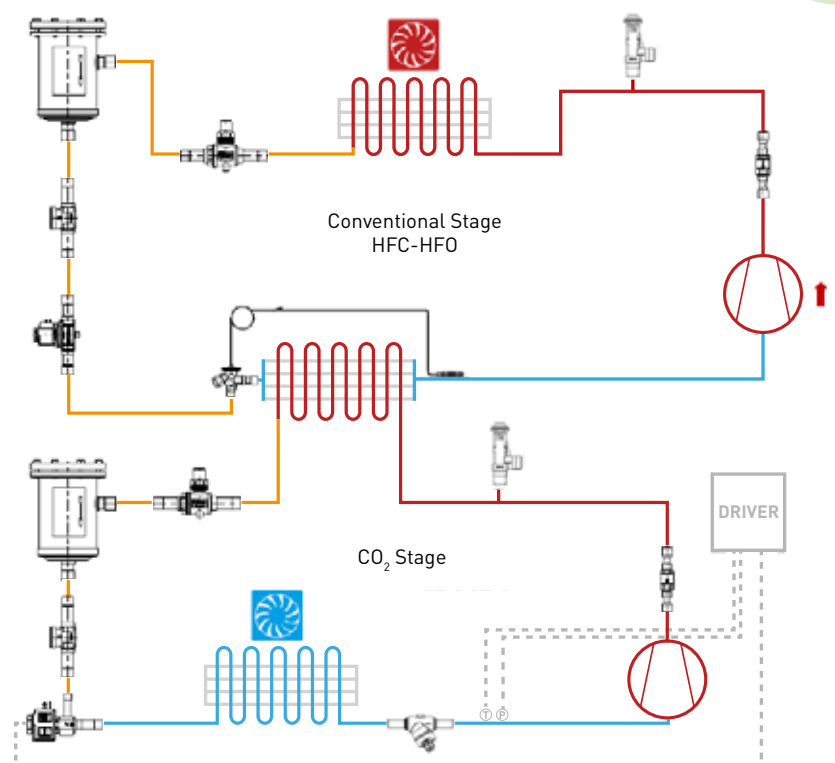
The technology applied depends on the application and location area of the installation. CO₂ uses is attractive and already largely used today in:

- **Industrial refrigeration.**
- **Food and retail refrigeration.**
- **Industrial and civil conditioning plants.**
- **Heat pump.**
- **Transport refrigeration.**

Castel products for CO₂ are designed for installation on refrigerating systems, which use the refrigerant fluid R744 using the best technology to achieve the maximum pressure in the appropriate technology.

- **PS = 60 bar** copper connections equipped, for subcritical systems.
- **PS = 80 bar** copper connections equipped, for transcritical systems low pressure side and medium pressure side.
- **PS = 120 bar** reinforced copper connections (K65) equipped, for transcritical systems high pressure side.
- **PS = 140 bar** stainless steel connections equipped, for transcritical systems high pressure side.

Higher efficiency
and lower
greenhouse gas
emissions



Castel Product family for CO₂ application



Product type	Product family	Max Operation Pressure PS (bar)	Application
Pulse Solenoid Expansion Valves	2028E	90	Transcritical low pressure side & medium pressure side
Normal Close Solenoid Valves	1028EL, 1038EL, 1048EL, 1058EL, 1098EL	60	Subcritical
	1437E	120	Transcritical
	1438E	140	Transcritical
Safety Valves	3030, 3060	55	Subcritical
	3061, 3065	70	Transcritical
	3030E	165	Transcritical
Change Over Valves	3032E	120-150	Transcritical
Ball Shut off Valves	3064E	80-150	Transcritical low pressure side & medium pressure side
Straight Check Valves	3132W, 3133W	45	Subcritical
	3132EW, 3133EW	80	Transcritical low pressure side & medium pressure side
	3137EW	120	Transcritical
	3138EW	140	Transcritical
	3145W	45	Subcritical
	3145EW	80	Transcritical low pressure side & medium pressure side
	3147EW	120	Transcritical
	3148EW	140	Transcritical
Right Angle Check Valves	3185W	45	Subcritical
	3185EW	80	Transcritical low pressure side & medium pressure side
	3187EW	120	Transcritical
	3188EW	140	Transcritical
Evaporating Pressure Regulators	3335EL	45	Subcritical
Condensing Pressure Regulators	3345EL	45	Subcritical
Moisture and Liquid Indicators	3940EL	60	Subcritical
	3740E	80	Transcritical low pressure side & medium pressure side
	3747E, 3748E	120	Transcritical
Filter Driers	4108E, 4116E	52	Subcritical
	DF-E 4520E	80 60	Subcritical
	4411E, 4412E	62	Subcritical
Strainers	4727E	120	Transcritical
	4748E	140	Transcritical
Ball Valves	6570EL, 6590EL	60	Subcritical
	6570E, 6590E	80	Transcritical low pressure side & medium pressure side
	6577E, 6597E	120	Transcritical
	6578E, 6598E	140	Transcritical
Three Ways Motorized Ball Valves	6690EM	80	Transcritical low pressure side & medium pressure side
	6697EM	120	Transcritical
	6698EM	140	Transcritical
Three Ways Hand Ball Valves	6690E	80	Transcritical low pressure side & medium pressure side
	6697E	120	Transcritical
	6698E	140	Transcritical
Valves	6010E, 6012E, 6110E, 6120E, 6420E	120	Transcritical
Valve cores	8395/A4	140	Transcritical
Threaded brass fittings	71	120	Transcritical
Access Fittings	83	120	Transcritical





GO GREEN

R744 • NATURAL REFRIGERANT



ISO 14001

Castel has always been aware of environmental sustainability issues and gives its contribution to a cleaner environment, supplying the refrigeration and air conditioning industry with state-of-the-art and environment-friendly technology. With its commitment and steady research in its laboratories, Castel has developed a whole range of products using natural refrigerants, which reduce emissions to the minimum. The large range of products belonging to the Castel "GoGreen" line has been developed to be used in CO₂ (R744)- and HC hydrocarbon-filled systems.

Castel can accept no responsibility for any errors or changes in the catalogues, handbooks, brochures and other printed material. Castel reserves the right to make changes and improvements to its products without notice. All trademarks mentioned are the property of their respective owners. The name and Castel logotype are registered trademarks of Castel Srl. All rights reserved.

