

# Ejector technology for the biggest Italian Hypermarket

*In a historic place of technology  
as the former Alfa Romeo factory in Arese (MI),  
Arneg has launched the Ejector technology  
for CO<sub>2</sub> transcritical systems  
where the biggest Shopping Center in Italy  
and Europe was inaugurated last April 14<sup>th</sup>.*



Arneg, in collaboration with Danfoss, Dorin and Luve, has developed two innovative CO<sub>2</sub> transcritical systems that supply more than 150 cabinets and cold rooms for an amount of 290 kW of MT refrigerating power and 30 cabinets in LT range for 38 kW of refrigerating power. Both racks are designed to work with a MultiEjector system.

It is well known that, above 30°C of ambient temperature, the efficiency of a simple transcritical system drops. MultiEjector technology target is able to recover the energy of the high-pressure gas discharge line, instead of wasting it in the common expansion valve. The recovered energy is given to the MT suction fluid, in order to raise its pressure. The work spent to bring the fluid from the lowest pressure of the system to higher pressure is lower than a simple transcritical system. In this way the Ejector technology allows CO<sub>2</sub> system to be competitive with a conventional R404A system even in warm climates. It is estimated that it is possible to reach up to 10% energy saving than a R404A system using a CO<sub>2</sub> Ejector rack, even in warm places as Arese, where in summer temperature can reach more than 38°C. Arneg implemented the MultiEjector block in a parallel compressor transcritical system, in order to maximize the

work of the parallel compressors. The main advantage of this system is to compress the flash gas before it reaches the lowest pressure of the cycle. With the MultiEjector system there are more advantages as more gas is compressed from the intermediate pressure stage and not from the lowest one. Moreover, to optimize the energy recovery, the intermediate pressure can be modulated depending on the gas cooler pressure.

In order to contribute to the building energy demand, both systems are able to produce up to 120 kW of hot water.

With this new further development within CO<sub>2</sub> technology, this natural gas can be considered, without any doubt, the best refrigerant, also in South of Europe, being able to guarantee both a reduction of the environment impact of the retail industry both energy savings. We have not to look to the Store Iper – La Grande in Arese as a single pioneering project, but as the starting point of a technology that can be widespread in warmer locations as Italy as well.

With this project Arneg shows that it is up to date with the newest and advanced technology that can be offered to the Retail Market and is looking at the future with really innovative eyes.