

## Pastorfrigor innovates the refrigerated cabinet with a record-breaking micro-channel technology

Borrowing a technology from the automotive sector and, duly optimized, using it in the refrigeration field, and turning it into a real technological innovation asset recognized world-wide. We are speaking about the micro-channel technology implemented by Pastorfrigor. As highlighted by the company itself, it regards a technical innovation in thermodynamics, already used in the automotive sector for over 20 years with excellent results. Pastorfrigor explains that «the idea was born about six years ago, with the aim of improving energy consumption and reducing the quantity of refrigerant, in order to comply with the new F-Gas regulations in good time. Pastorfrigor decided to start using microchannel-based condensers instead of tube-and-fin ones. This technology has enabled us to reduce the gas charge by approx. 30% in our systems, and improve energy consumption. » Thanks to a lower quantity required by these condensers, it has been easy to manufacture refrigerated cabinets performing with

R290, where the gas charge threshold of 150 grams was a problem working with traditional tube-and-fin condensers. The company emphasizes the fact that producing a wall multi-deck cabinet with built-in compressor and complying with F-gas regulations with R290 meant using 2/3 separate circuits and, as a consequence, as many compressors, condensers, and special multi-circuit evaporators. All that means more costs, but also an increased risk of gas leakage, and more labour. This is the reason why they approached the micro-channel technology, and achieved to design and patent what, until now, is the only refrigerated cabinet longer than 2 meters with a single R290 circuit and gas charge lower than 150 grams in the world. To reach this result, they benefited from the various advantages offered by micro-channel heat exchanger, turning its use from condenser to evaporator. The advantages of a smaller volume, combined with higher performance, helped in reaching the goal, i.e. having a 2500 mm long refrigerated cabinet with a single propane refrigerating circuit: «This has been possible thanks to the cooperation with Sanhua company who has been supporting and working together with us in this project: the efficiency of Embraco compressors with R290, and the performance of Sanhua Micro-channel condensers and evaporators, make it possible to reach outstanding results». A further element is the recyclable materials used to build the entire structure, completely made of aluminium, working in a sustainable way and with due respect for the environment and the EU provisions on circular



economy. Aluminium has an excellent durability, but it is also a lightweight material: in Genova cabinet, the evaporator weighs 30% less than traditional solutions, and has smaller overall dimensions (-20%). However, the most remarkable feature is the reduced consumption: it has been reported an average saving ranging between 25 and

50%, savings in terms of energy costs by 47% (equal to 565 euro for model Genova LF2500 annually), as a result of a lower gas charge. Thanks to all these features, this refrigerated cabinet and its technology have been successful, both commercially and technically: in fact, it has been selected among the finalists of the RAC Cooling Industry Awards 2017.

Source: [www.zerosottozero.it](http://www.zerosottozero.it) December 2017 Magazine