

## Special Interview

# Epta Contributes to Sustainability with Its CO<sub>2</sub> Refrigeration Technology

In March 2024, JARN visited Italy and interviewed Francesco Mastrapasqua, Institutional Affairs manager of Epta, an Italy-based global player specialized in commercial refrigeration, to hear mainly about its sustainable contributions through its products and technologies.



Francesco Mastrapasqua



Francesco Mastrapasqua (far left) receives JARN's interview during MCE 2024

**JARN (J):** *Firstly, could you briefly introduce Epta?*

**Francesco Mastrapasqua (M):** Epta is an independent global player specialized in commercial refrigeration, operating with 8,000 employees in over 100 countries, with a turnover of €1.432 billion (about US\$ 1.550 billion). Epta has recently strengthened its position in the Northern European market, thanks to the completion of a joint venture transaction with Viessmann Refrigeration Solutions and the acquisition of the refrigeration services and professional air conditioning solutions business of Heifo in Germany.

**J:** *What are the major challenges and opportunities for a company like Epta to achieve sustainable development?*

**M:** Refrigeration accounts for 40% of the energy consumption of a medium-sized supermarket, so it is essential for an operator like Epta to propose best-in-class environmentally friendly solutions within the framework of the Energy Label regulation, which is the major challenge. Aware of operating in one of the traditionally most ener-

gy-intensive and environmentally impactful sectors, being a leader for Epta means taking on the significant responsibility of devising new solutions to limit the energy demand of the sector, making commercial refrigeration increasingly natural.

Epta's sustainable innovation is pursued primarily through internal investments, creating substantial development opportunities. Therefore, from 2019 through 2022, €59 million (about US\$ 64 million) have been invested in a dedicated research and development (R&D) team of 270 people and an Innovation Center, a hub for experimenting with future technologies. In 2023 alone, Epta invested €33.9 million (about US\$ 36.7 million), always focusing on product and process innovation. All of the investments carried out over the past four years have amounted to more than 2% of turnover and a similar commitment is expected in the years to come.

**J:** *Which technologies did Epta use to completely overcome the use of hydrofluorocarbons (HFCs) in refrigeration?*

**M:** Epta has developed numerous technological innovations to overcome the use of HFCs and other types of synthetic refrigerant blends. Epta is a pioneer in the design and development of high-performance technologies with natural refrigerants such as hydrocarbons (HCs) and CO<sub>2</sub>, and boasts the distinction of having been the first to implement a CO<sub>2</sub> system in Europe in 1999 in Sweden, combining sustainability with energy efficiency.

Today, Epta vaunts over 3,000 CO<sub>2</sub> plants worldwide. Thanks to the group, CO<sub>2</sub> is now the industry standard. Epta's natural refrigeration systems exert an impact that is 4,000 times lower than those using conventional refrigerants and ensure excellent efficiency with significant energy savings, exceeding 20%. For example, in a retail store in Romania, energy savings equivalent to the consumption of 85,000 dishwasher cycles per year were calculated.

**J:** *What research activities does Epta conduct to further improve F-gas free solutions?*

**M:** Epta demonstrates its leadership through continuous research aimed at further optimizing the use of CO<sub>2</sub>, and the innovative Extra Transcritical Efficiency (XTE) is the result of this growth mindset. The XTE is a patent-pending technology that guarantees the efficient operation of transcritical CO<sub>2</sub> plants, even in one-stage refrigeration and industrial applications, at any latitudes. The system runs in the absence of synthetic or flammable coolants and without using water, as it uses CO<sub>2</sub> from the transcritical system as a cooling fluid. In detail, XTE mounts a pressure exchanger, suitably modified for use with CO<sub>2</sub> in combination with the Epta Extreme Temperature Efficiency (ETE) system. Like ETE technology, the XTE mechanism not only reduces consumption peaks during warm months, guaranteeing energy savings of more than 30% at temperatures above 40°C compared with a traditional transcritical system, but also offers significant

benefits during cold months, during which the XTE system starts running when the temperature is 10°C. XTE represents a contribution to the ENOUGH project, funded by the European Union's Horizon 2020 research and innovation program and coordinated by SINTEF Ocean in Norway, of which Epta is one of the main supporters, with the aim of decarbonizing technologies for the retail sector and making the cold chain climate-neutral and more efficient.



Epta showcases XTE and ETE technologies at C&R 2023

**J:** *In conclusion, what are the main objectives that Epta has set for the future?*

**M:** The objectives we have set in the 2024–2027 Strategic Plan are ambitious and include achieving 95% recycling of waste, reducing CO<sub>2</sub> emissions from processes by about 55%, and purchasing 100% of energy from renewable sources. For us, sustainable innovation extends beyond product development to the reorganization of production processes and the creation of cutting-edge systems and technologies.