



multi PACK

MultiPACK unit for
supermarkets in the
area of Rome

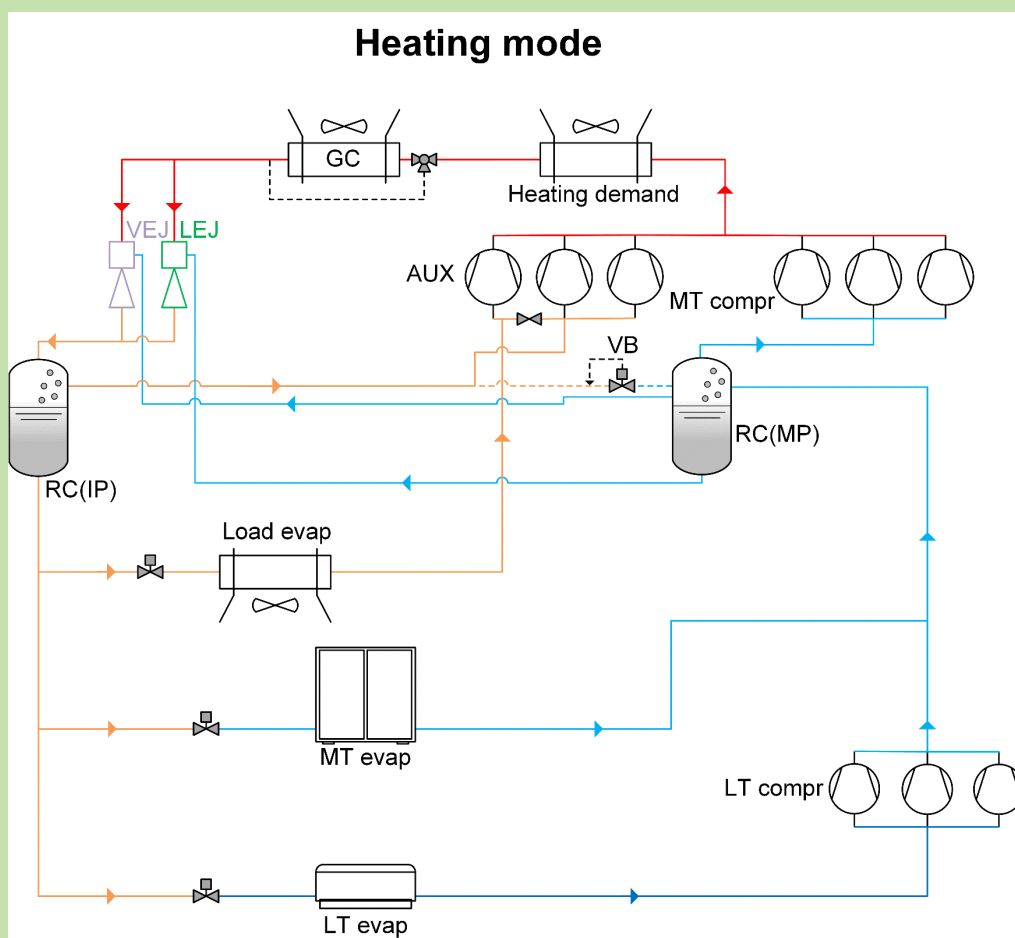


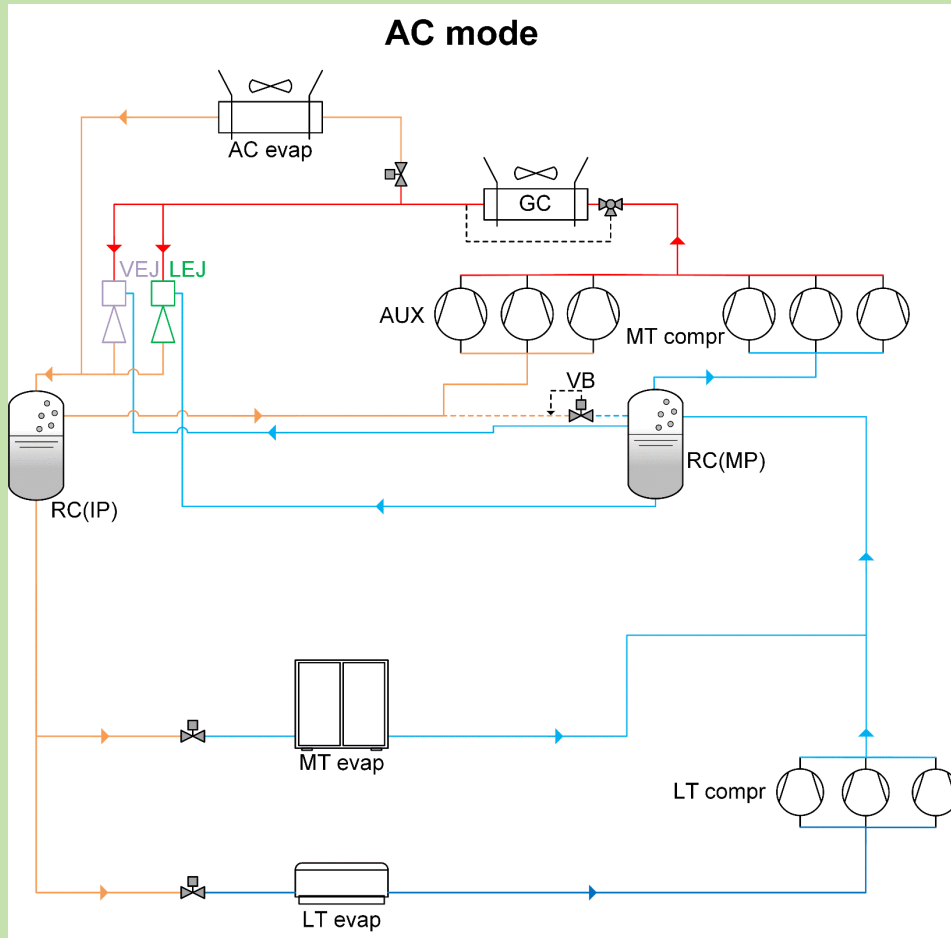
MultiPACK aims at demonstrating the performance and efficiency of the next generation of standardized integrated cooling and heating packages for commercial and public buildings (e.g. supermarkets, hotels, spas, gyms) based on the environment-friendly carbon dioxide (R744). The project will help owners of high-energy demanding buildings to:

- reduce energy consumption and environmental impact;
- increase the economic benefits by saving energy and the costs of maintenance and servicing;
- use the most recent CO₂ technology;
- comply with all regulations and environmental commitment.

MultiPACK goal will be achieved by running demonstration tests at 6 relevant commercial sites in Southern Europe. The project consortium consists of 7 partners across Europe: one is a technical university (NTNU Norwegian University of Science and Technology), serving as the coordinator of the project; two are national, independent research institutes (SINTEF Energy Research, CNR Italian National Research Council); two OEMs developing and manufacturing the components and the MultiPACK system (DANFOSS, ENEX srl); one is a contractor installing and maintaining refrigerating units (RACE); one is a multinational corporation owning and operating Supermarkets in Portugal (SONAE).

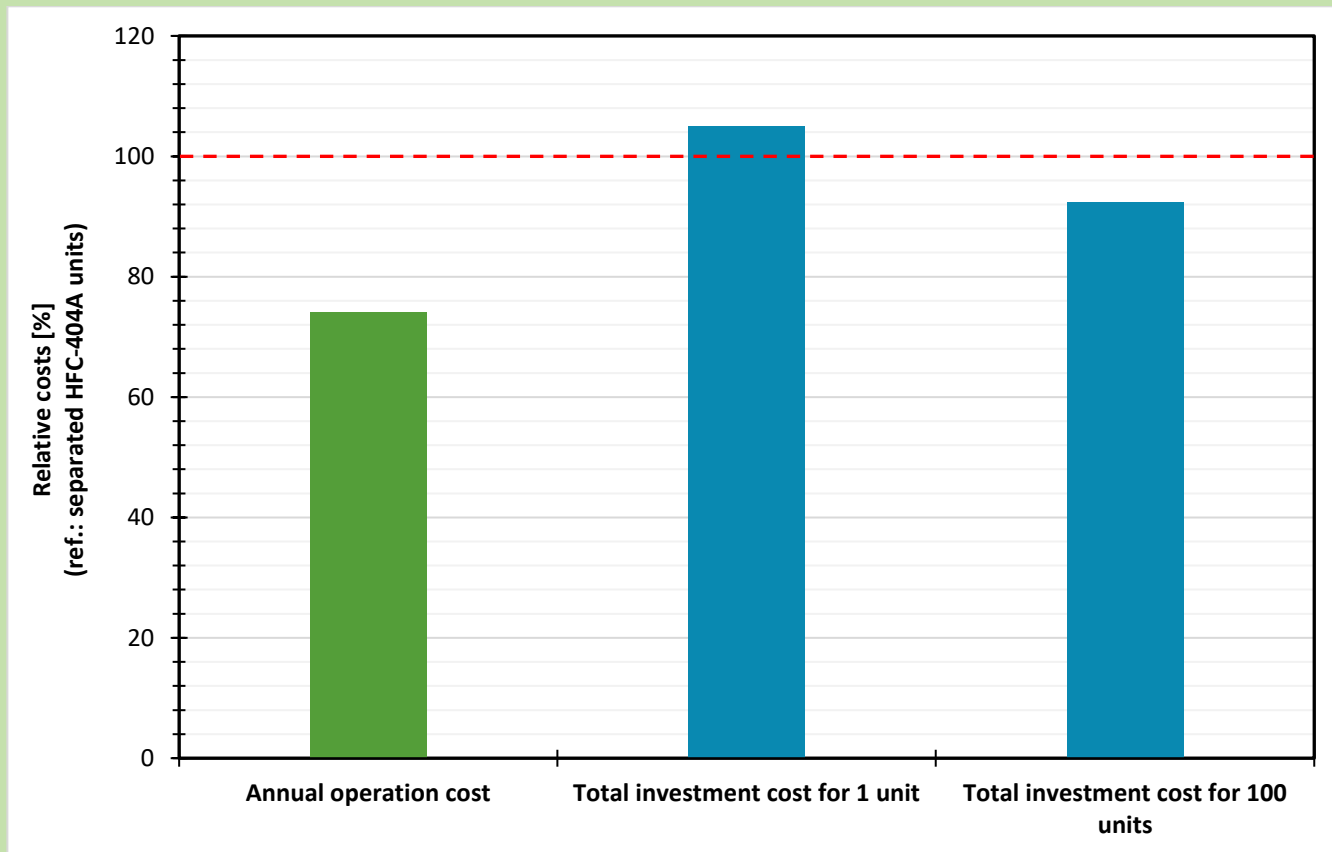
In this leaflet the main characteristics as well as the most relevant results for the MultiPACK unit to be installed in the area of Rome are summarized. A simplified system layout is sketched for the heating mode as well as for the air conditioning (AC) mode. The total required loads for this food retail store are 50 kW @ -4 C for medium temperature (MT) side, 20 kW @ -35 C for low temperature (LT) side, 75 kW @ +10 C for AC, and 110 kW @ +30 C for heating of the building.





As shown in the following Figure, the MultiPACK system features a reduction in the annual operation cost by about 25% compared to separated R404A direct expansion refrigeration units in the current supermarkets located in the area of Rome. As the first unit is representing a handmade innovative technology (no mass production), the total investment cost of the first integrated CO₂ MultiPACK solution is slightly higher than that of the current R404A-based systems. However, the OEM supplier predicts potential customers a considerable reduction of the investment costs, when scaling up of production will take place of similar MultiPACK units. As showed in the Figure below, the total investment cost of a MultiPACK system will decrease by 12% in relation to R404A-based solutions in case of purchase of 100 units.





For further information, please visit the [project website](#) and/or e-mail us at contact@multipack.ntnu.edu.





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