multi
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MultiPACK unit for supermarkets in the area of Lisbon

European Commission
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for Research & Innovation

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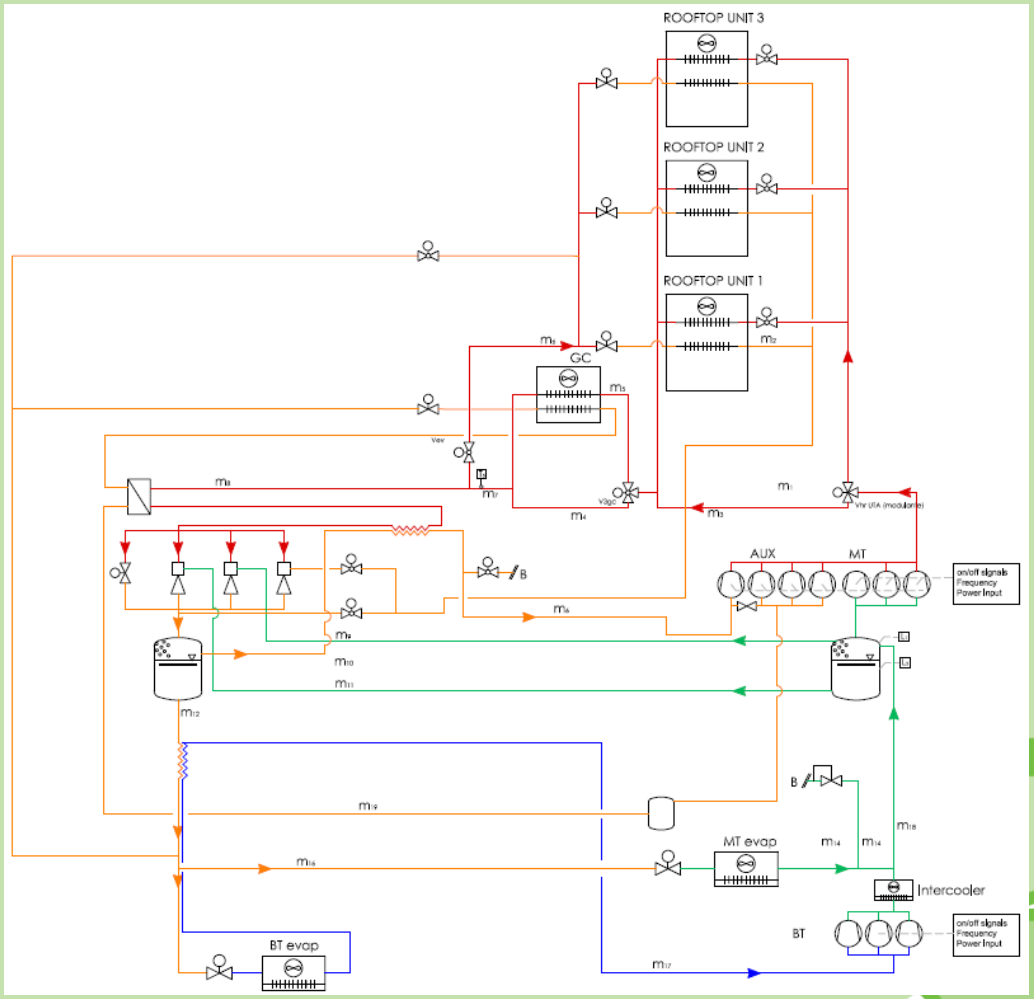
MultiPACK aims at demonstrating the performance and efficiency of the next generation of standardized integrated cooling and heating packages for commercial and public buildings (e.g. supermarkets, hotels, spas, gyms) based on the environment-friendly carbon dioxide (R744). The project will help owners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

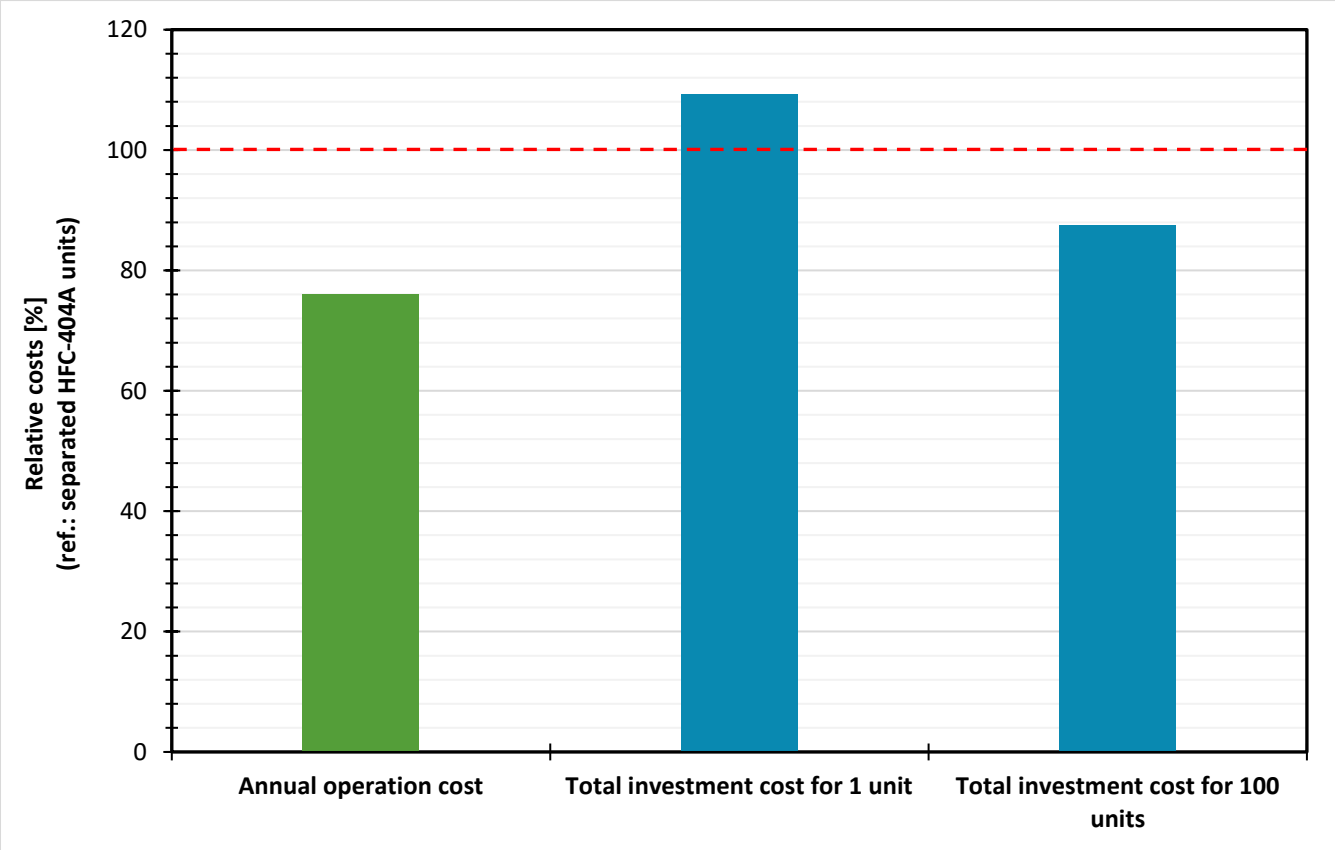
- reduce energy consumption and environmental impact;
- increase the economic benefits by saving energy and the costs of maintenance and servicing;
- use the most recent CO_2 technology;
- comply with all regulations and environmental commitment.

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 Lisbon 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 100 kW @ -2 C for medium temperature (MT) side, 24 kW @ -25 C for low temperature (LT) side, 180 kW @ +10 C for AC, and 160 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 a baseline R134a/R744 cascade refrigeration system in the current supermarkets located in the area of Lisbon. As the first unit is representing a handmade innovative technology (no mass production), the total investment cost of the first integrated CO_2 MultiPACK solution is slightly higher than that of the current cascade system. 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 20% in relation to a HFC-134a/CO_2 cascade solution in case of purchase of 100 units.



For further information, please vist the project website and/or e-mail us at contact@multipack.ntnu.edu.

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