

Lower Refrigerant Charge through Secondary Systems

Secondary refrigeration systems with two independent cooling cycles – a primary cycle for the refrigerant and a secondary cycle to ensure heat transfer – result in lower refrigerant charges while also providing health and safety advantages. As the refrigerant is kept in the machine room and not in working or public areas, the pollutant risk is minimized. In order to operate the secondary cycle properly, heat transfer fluids (HTF) are required. Examples in Greece show the efficient operation of these systems in practice:

- Replacement of R134a and toxic MEG (monoethylene glycol) cooling system in Marinopoulos logistic center using ammonia water cooled chillers with a capacity of 2 x 900 kilowatt
- Replacement of R404a cooling system of a bakery production with an NH₃-CO₂ cascade system for blast chillers.

HTF can also use the waste heat already in a system for defrost in CO₂ plants. This heat is “free” in the sense that no extra electricity is needed. Thus, secondary refrigeration systems with HTF are an environmentally friendly and an energy efficient solution for many applications – not only food applications in the warm climate of Greece.

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