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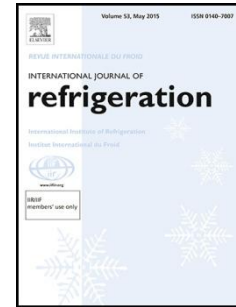
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SEASONAL ENERGY EFFICIENCY RATIO FOR REMOTE CONDENSING UNITS IN COMMERCIAL REFRIGERATION SYSTEMS

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Highlights

- Energy labelling is a useful and simple tool to compare between different solutions
- Extension of the existing standards to remote condensing units is discussed
- The accuracy vs complexity of this simplified approach to SEPR is discussed
- Good capability to compare different systems annual performance is demonstrated

Abstract

Different technological solutions are nowadays available to improve energy efficiency in centralised commercial refrigeration packs. Energy assessment of possible solutions is nowadays performed with different computational tools and comparison between alternative solutions is often difficult. In this paper, a methodology following the European Standards EN 14825 and EN 13215 is proposed for discussion.

Sensitivity analysis with respect to climatic categorisation of European and Mediterranean Countries is presented. The accuracy of the Seasonal Energy Performance Ratio (SEPR) estimations in comparison to traditional hourly based calculation is discussed using both absolute and relative energy figures. The reliability and usefulness of the presented method as a tool for a fair and accurate comparison between different systems is presented. Finally, next steps needed for the method full development are identified and possible further steps meeting the technology trend in commercial refrigeration are highlighted.

Keywords: Carbon Dioxide, Supermarket, Energy Efficiency, Seasonal Performance, Ecolabel

Nomenclature

r	specific humidity ratio	[-]
z	number of reference climat/bins distribution	
P_c	non dimensional cooling demand	[-]
P_n	nominal cooling power	[-]
RH	relative humidity ratio	[%]
T	Temperature	[K]
U	number of test locations	

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