

Full-scale facility for night and day-time passive radiative cooling system assessment

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ABSTRACT

As part of the EURAMET research project "Metrological framework for passive radiative cooling technologies" (PaRaMetriC), the aim of the research is to implement a prototype cooling system to assess the potential of passive radiative cooling (PRC) materials and their applicability for achieving thermal comfort conditions in buildings. The experimental setup is based on a full-scale facility located in Arganda del Rey, community of Madrid, Spain. This study describes the characteristics of the radiative cooling system with its different components and the test facility. Previous experiments have demonstrated the applicability of a similar system, based only on nighttime radiative cooling, for less favorable climatic conditions in Curitiba, Brazil. The assessment of the system in full-scale is essential to showcase the contribution of PRC materials can have for ensuring indoor thermal comfort in extreme weather conditions.

KEYWORDS

Building comfort, Passive radiative cooling, Full-scale test cells, Performance assessment, Radiant-capacity cooling system,