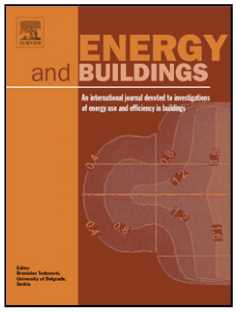

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Definition of a new set of parameters for the dynamic thermal characterization of PCM layers in the presence of one or more liquid-solid interfaces

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Highlights

- A set of parameters for a complete thermal characterization of PCM layers are defined
- Various PCM layers with different melting temperatures are considered
- The analysis regard a continental and a mediterranean climate
- Dynamic parameters are related to the latent storage efficiency
- Phase change in the 35% of the layer thickness is sufficient to reach high thermal performances

Abstract

The objective of the research is the definition of a new set of parameters to evaluate the effective dynamic thermal behavior of a layer subject to phase change (PCM) that, for the effect of non-sinusoidal periodic boundary conditions, characterizing the external walls of air-conditioned buildings, give rise to the formation of one or more melting or solidification bi-phase interfaces. Such bi-phase interfaces originate on the boundary surfaces, or are always present and fluctuate within the layer. Defined parameters are to be used for the thermal design of innovative walls