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Mohamed Lachheb, Zohir Younsi, Hassane Naji, Mustapha Karkri, Sassi Ben Nasrallah

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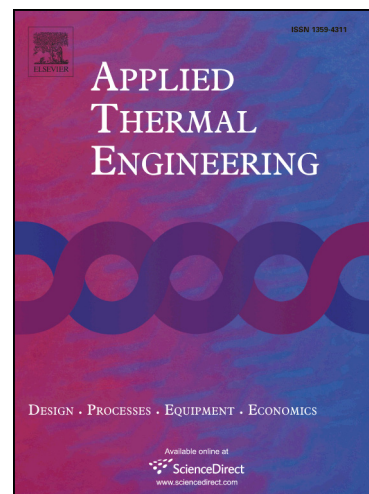
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**Thermal behavior of a hybrid PCM/plaster: A numerical and experimental investigation**

Mohamed Lachheb <sup>a, \*</sup>, Zohir Younsi <sup>b, c</sup>, Hassane Naji <sup>c, d, \*</sup>, Mustapha Karkri <sup>e</sup>,  
Sassi Ben Nasrallah <sup>a</sup>

<sup>a</sup> Ecole Nationale d'Ingénieurs de Monastir, Laboratoire d'Etudes des systèmes Thermiques et Energétiques (LESTE), Avenue Ibn El Jazzar, 5019 Monastir, Tunisie.

<sup>b</sup> FUPL, Hautes Etudes d'Ingénieur (HEI), LGCgE (EA 4515), 13 Rue de Toul, F-59000 Lille, France.

<sup>c</sup> Univ. Artois, Laboratoire Génie Civil & Geo-Environnement (LGCgE - EA 4515) Technoparc Futura, F-62400 Béthune, France.

<sup>d</sup> Université Lille Nord de France, LGCgE- EA 4515, Lille F-59000, France

<sup>e</sup> Université Paris-Est, CERTES, 61 Av. du General de Gaulle, 94010 Créteil cedex, France.

\* Corresponding author: Tel.: +33 6 11 26 79 83.

Email-addresses: lachheb\_med@yahoo.fr; hassane.naji@univ-artois.fr

**ABSTRACT**

The Phase Change Material (PCM) integrated in building envelope can decrease the energy requirement for maintaining thermal comfort by enhancing the thermal energy storage of the wall and the roof. This study deals with numerical and experimental study of the thermal behavior of new plaster composite containing a microencapsulated PCM that can be embedded as a component in passive solar walls. Experimental measurement was performed by using a transient guarded hot plates method based on heat flux and temperature measurements. As for numerical simulation, it is based on the enthalpy method. Such a simulation was performed using a finite volume method (FVM). Then, a comparison between the two approaches is performed. It is found that our numerical findings match the experimental results. Interestingly, the results demonstrate the suitability of incorporating microencapsulated PCM into plaster.

Based on the obtained results, it may be stated that the thermal storage capacity of the plaster is greatly enhanced.

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