

Meanwhile, the thermal physical and mechanical properties of the CA-PA/EVM-based thermal energy storage mortars were examined to determine if the composite material based on the newly invented CA ...

The compressive strength of paraffin/vitrified microsphere phase change energy storage mortar is 5.35 MPa, the thermal conductivity is 0.3372 W/m \cdot K which improved the insulation performance of mortar significantly.

Latent heat energy storage is among the highly effective and dependable methods for lowering one's energy usage. This method involves employing phase change materials (PCM) for storing and ...

In this study, the thermal energy storage cement-based composites were fabricated by integrating cement mortar with the form-stable hydrate salt PCMs based on binary eutectic hydrate salt/expanded graphite oxide (EHS/EGO) and EHS/poly (acrylamide-co-acrylic acid) copolymer (EHS/P(AA-AA)). The form-stable hydrate salt PCMs were incorporated in cement-based ...

ABSTRACT Thermal energy storage recycled powder mortar (TESRM) was developed in this study by incorporating paraffin/recycled brick powder (paraffin/BP) composite phase change ...

in this study, an innovative composite thermal energy storage cement mortar (CTESCM) was developed using lauric acid-palmitic acid/expanded graphite (LA-PA/EG) as the composite ...

The composite phase change energy storage thermal insulation mortar with reasonable formula had a suitable phase transition temperature of 25.6 \pm 176 $^{\circ}$ C and a higher phase change latent heat of 89.8 kJ/kg. The 50 mm composite phase change thermal insulation mortar was used in the back wall of the brick wall solar greenhouse as the experimental ...

Experimental investigation on the effects of phase change material and different ventilation modes on the thermal storage, space heating and energy consumption characteristics of ventilated mortar ...

In this study, capric-stearic acid (CA-SA) was employed as the phase change material (PCM), while expanded perlite (EP) was utilized as the supporting material to prepare CA-SA/EP composite through vacuum impregnation method. According to the leakage experimental results of CA-SA/EP, the ideal weight fraction of CA-SA was found to be 50 %. The micro ...

In the current work, the thermal energy storage cement mortars were prepared by physical mixing between cement mortar and form-stable hydrated salt based on disodium hydrogen phosphate dodecahydrate/carbon

nanofiber-expanded graphite (DSP/CNF-EG). The DSP/CNF-EG was incorporated into cement mortar through replacing standard sand of 5 wt%, ...

Request PDF | On Nov 1, 2023, Irene Ramón-Álvarez and others published Experimental and computational optimization of eco-friendly mortar blocks for high temperature thermal energy storage of ...

With an increasing energy deficit, improving the thermal properties of building materials is nowadays a priority. The incorporation of expanded polystyrene (EPS) and expanded perlite (EP) into cement mortar has shown enormous potential to improve overall thermal performance. This study aims to numerically evaluate the efficiency of using EPS and EP ...

The objective of this study is to prepare a type of innovative thermal energy storage cement mortar with a good heat transfer ability and form-stability, compared with ...

1. Introduction. The energy demand for heating and cooling the global building stock represents a massive part of the total energy consumption around the world (? 40%) [] the EU, it accounts for about half of all energy consumption [].To attenuate this number, thermal efficiency of construction and building elements, like walls, roofs, and floors, has become the most ...

The mechanical and thermal properties of thermal energy storage mortar usually have the characteristics of mutual restrictions and are difficult to synergistically improve.

This work reports an experimental study regarding the energy saving potential of an innovative concept of thermal energy storage, which consists in embedding more than one type of Phase Change ...

The present work aims at developing the hybrid nanocomposite-based phase change material (PCM) embedded cement mortar (HNPCM) for thermal energy storage (TES). ... Experimental results reveal that ...

Experimental study on the thermal performance of a wall coated with a phase-change, energy-storing mortar layer during summer. Author links open overlay panel Guo hua Tian a b, Heng lin Lv a b, ... The concept of energy storage and release efficiency (ESRE) has been defined and calculated to illustrate the potential of the new system for energy ...

In this study, the thermal energy storage cement-based composites were fabricated by integrating cement mortar with the form-stable hydrate salt PCMs based on binary eutectic hydrate salt/expanded ...

Thermal energy storage recycled powder mortar (TESRM) was developed in this study by incorporating paraffin/recycled brick powder (paraffin/BP) composite phase change materials (PCM). Fourier transform infrared and thermogravimetric analysis results showed that paraffin/BP composite PCM had good chemical and thermal stability. The onset melting ...

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In this work, we used DSP/CNF-EG to prepare a novel thermal energy storage cement mortar based on the mechanical blending between cement mortar and DSP/CNF-EG. The compressive strength, flexural strength, pore structure, thermal conductivity, specific heat ...

Radiant heating floor integrated with micro encapsulated phase change material (PCM) can significantly increase the thermal storage capacity, and inside air channels can enhance the heat release flexibility. In this study, the impacts of micro encapsulated phase change material and ventilation on the thermal and energy characteristics of mortar blocks were experimentally ...

The present work aims at developing the hybrid nanocomposite-based phase change material (PCM) embedded cement mortar (HNPCM) for thermal energy storage (TES). The microstructural, thermal and structural properties of the as-prepared HNPCM were experimentally analyzed. The microstructural test results reveal that, the copper-titania ...

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Thermal energy storage recycled powder mortar (TESRM) was developed in this study by incorporating paraffin/recycled brick powder (paraffin/BP) composite phase change materials (PCM).

To explore the application of phase change energy storage materials in building energy conservation, in this study, an innovative composite thermal energy storage cement mortar (CTESCM) was ...

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