Indoor energy storage system shell materials

What is thermal energy storage?

Thermal energy storage (TES) is a promising and sustainable method for decreasing the energy consumptions in the building sector. Systems of TES using phase change materials (PCMs) find numerous applications for providing and maintaining a comfortable environment of the building envelope,without consumption of electrical energy or fuel .

What are the different methods of thermal energy storage?

The article presents different methods of thermal energy storage including sensible heat storage,latent heat storage and thermochemical energy storage,focusing mainly on phase change materials (PCMs) as a form of suitable solution for energy utilisation to fill the gap between demand and supply to improve the energy efficiency of a system.

Are thermal energy storage systems sustainable?

Thermal energy storage systems with PCMs have been investigated for several building applications as they constitute a promising and sustainablemethod for reduction of fuel and electrical energy consumption,while maintaining a comfortable environment in the building envelope.

What are the different types of thermal energy storage systems?

There are three types of TES systems: sensible heat,latent heat,and chemical storage system(Figure 1). The present work presents latent heat storage systems using PCMs [8,9]. Figure 1. Classification of thermal energy storage types and materials. 2.1. Sensible Heat Storage (SHS)

What is a sensible heat storage system?

In case of sensible heat storage (SHS) systems, storing of energy is induced by utilization of the heat capacity gained by temperature increment of the material. The energy storage capacity of SHS systems depends on the specific heat capacity of the material, the quantity of the material and the temperature change gradient.

How does TES store thermal energy?

TES stores thermal energy for later use directly or indirectly through energy conversion processes,classified into sensible heat,latent heat,and thermochemical storage . Latent heat storage is favoured for its practicality,storing a large amount of energy in a small volume and releasing it at a constant temperature .

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