Heat pipe energy storage for energy saving and emission reduction

Heat pipes are becoming increasingly popular as passive heat transfer technologies due to their high efficiency. This paper provides a comprehensive review of the ...

The bottom line is that to get the best possible energy efficiency from furnaces and ovens, reduce the amount of energy carried out by the exhaust and lost to heat storage, wall conduction, ...

Today, the proliferation of new energy vehicles (NEVs) is flourishing worldwide. Adopting a sustainable and highly efficient power source such as lithium-ion batteries (LIBs) for NEVs is ...

HVAC system energy saving technology is an important part of promoting the building industry to reduce energy consumption. With the popularization of HVAC systems in engineering, there ...

This study presents an experimental and numerical investigation into the efficiency of a two-stage heat recovery-storage system for reducing the thermal energy losses in the industry. The ...

Current financial support for installation of heat pumps and steps to make homes more thermally efficient are a good start. But such incentives must be coupled with a new approach to ...

What is Thermal Energy Storage (TES)? Thermal energy storage (TES) is one of several approaches to support the electrification and decarbonization of buildings. To electrify buildings ...

In China, the cold chain industry has a promising market prospect, and there is a requirement to conserve energy in cold storage facilities in the context of the dual-carbon ...

At an ambient temperature of 3 5°C and an indoor temperature of 25.8 °C, the cooling capacity of the heat pipe in the data center water evaporation la-tent heat pipe air-conditioning system is ...

Solar energy, coupled with innovative technologies, holds the promise of propelling buildings towards net-zero and carbon neutrality. In this regard, this review explores ...

To address the current problem of high energy consumption in data centers, this paper proposes a data center heat pipe air-conditioning ...

Current financial support for installation of heat pumps and steps to make homes more thermally efficient are a good start. But such incentives must be coupled ...

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Thermal Energy Storage (TES) enhances sustainable district heating by storing excess heat, balancing supply/demand, boosting efficiency, and reducing ...

This study identifies the ideal forms of variable thermophysical properties (specific heat and thermal conductivity) of energy-consuming building envelopes in different ...

The demand for utilizing heat pipes in renewable energy systems along with building heat recovery, highlighting novel concepts and requirements is increasing. Several ...

Abstract Heat pumps are considered as easy to use while utilizing the possibility of bringing low-temperature heat sources to a higher temperature. Thus, low-grade renewable ...

The carbonisation of energy structures is a principal reason for the high carbon levels of carbon dioxide (CO2) emissions in the steel industry. The implementation of an ...

In order to enhance the thermal performance of latent heat thermal energy storage (LHTES) system and thermal management system, a novel method that coupling ...

However, the operating strategy for cost minimising in district heating system models is dependent on the size of heat pump and thermal ...

As it can be noticed from the graphs, given the amount of available waste heat power from industrial recovery, the larger the basin, the greater the waste heat source ...

A novel type of heat pipe application for cold energy storage has been proposed and discussed in this paper. The cold storage system is aiming at saving electricity for data center cooling. A ...

2. Literature review The exploration of heat storage technologies has gained significant attention in recent years, particularly in the context of sustainable energy systems. ...

The corresponding annual CO 2 emission reduction is between 0.02 and 1.90 kg/ (m 2 ·year) and between 0.10 and 8.07 kg/ (m 2 ·year), respectively. Variable ...

This paper investigates the reduction of operational costs and CO 2 emissions resulting from an optimal operation of an industrial heat pump paired with a thermal energy ...

The heating power of the liquid-cooled PV/T system and heat pipe PV/T system can reach 847.4 and 948.5 W, and the primary-energy saving efficiency can reach 68.8% and ...

An air-conditioning system (ACS), which consumes large amounts of high-grade energy, is essential for

maintaining the indoor thermal environment of modern buildings. ...

Network transmission and distribution heat loss is one of the key factors in the optimal design of low-energy DH systems. Various pipe configurations are considered in this paper: flexible pre ...

This review explores in a systematic way all the available bibliography regarding hybrid systems of heat pipes and latent thermal energy storage (TES) systems and analyses ...

In order to make full use of the waste heat of the electric arc furnace, this paper presents an the energy-saving transformation program of using the new heat pipe boiler on the ...

From the system research methodology, the heat pipe structure, simulation and testing analyses were conducted. From the energy performance evaluation, the energy ...

The paper presents novel concept for datacenter thermal management using heat-pipe based energy conservation system utilizing cold ambient energy. Two type of ...

An air-conditioning system (ACS), which consumes large amounts of high-grade energy, is essential for maintaining the indoor thermal ...

In conclusion, heat pipe/phase change material coupled thermal management possesses considerable energy-saving potential after optimization and is promising to utilize in ...