HJ Solar

Phase change solar container and the oil industry

Overview

In general, it is recommended to use solar energy systems integrated with latent thermal storage, i. To address the issues of high energy consumption and operating costs in the temperature maintenance and heating of floating roof oil tanks, a phase-change temperature maintenance simulation system using a solar source–sewage source heat pump was designed. Solar water heater, PCM paraffin wax, heat exchangers, crude oil, and other materials were used. The research mainly focused on setting up accurate CFD models in ANSYS fluent of various designed systems.

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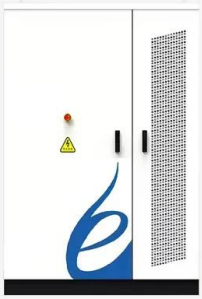
Use of Phase Change Materials for Solar Systems Applications

The main challenge of this project is to use multiple phase change materials to improve the efficiency of PV panels by cooling them and accelerating the re-solidification process of PCMs. ...

Performance enhancement of single-slope solar still using phase change

The performance of the proposed solar still was tested under the use of phase change material (RT42PCM) with different quantities of 2, 4, and 6 kg in weight, which was placed inside the ...



A review on container geometry and orientations of phase change

Abstract Phase change materials (PCM) are employed to store thermal energy in solar collectors, heat pumps, heat recovery, hot and cold storage. PCMs are encapsulated primarily in ...

A Solar-Heated Phase Change Composite Fiber with a Core-Shell ...

To address this issue, this study created a new composite fiber that not only possesses solar energy conversion and storage capabilities but also facilitates crude oil removal.

Thermal energy storage using phase change material for solar thermal

To overcome these challenges, integrating phase change material (PCM) in solar thermal technologies makes a sustainable approach to enhance the efficacy, productivity, and utilization rate ...

Plant oil-based phase change materials for sustainable thermal energy

Plant oil-based PCMs (PO-PCMs), such as those made from coconut oil, palm oil, and castor oil, are both biodegradable and renewable. Additionally, they have a high energy storage ...

Application of solar energy in the oil industry--Current status and

Specifically, solar energy will help the industry in meeting part of its energy requirements in locations where conventional fuels, such as natural gas, are limited. This paper reviews various ...

Review on the challenges of salt phase change materials for energy

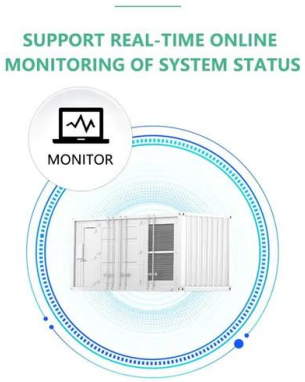
Abstract Concentrated Solar Thermal Power has an advantage over other renewable technologies because it can provide 24-hour power availability through its integration with a thermal ...

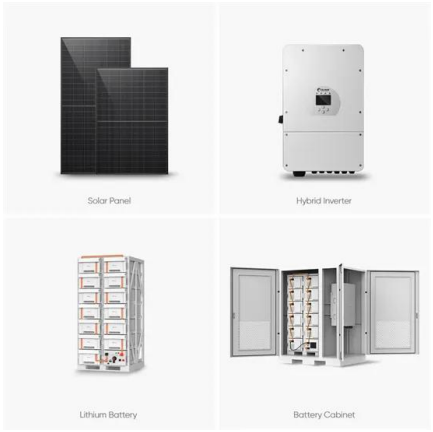
IRENA - International Renewable Energy Agency

IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy, in the pursuit of ...

Analysis of Operation Characteristics of Phase-Change

To address the issues of high energy consumption and operating costs in the temperature maintenance and heating of floating roof oil tanks, a phase-change temperature maintenance ...





A Solar-Heated Phase Change Composite Fiber with a ...

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Synergizing environmental and technological advances: Discarded

Synergizing environmental and technological advances: Discarded transmission oil and paraffin wax as a phase change material for energy storage in solar distillation as a step towards ...

Simulation of Solar Phase Change Thermal Storage Distributed ...

This study explores the design of a distributed energy system integrated with solar phase change thermal storage. Using MATLAB and Simulink, a mathematical mode.

Effect of Phase Change Material Heated by Solar Energy on the Flow

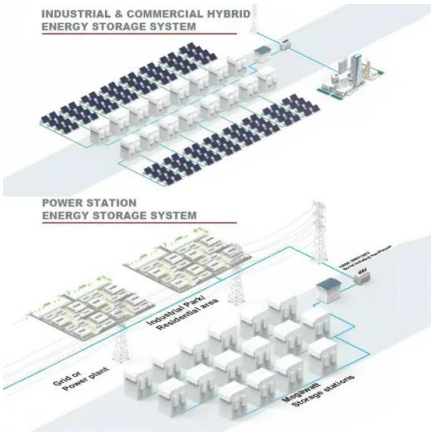
Oil companies employ techniques including mixing, heating, and injection to lessen the viscosity of crude oil, as well as nanotechnology to lessen the viscosity. The present study aims to gradually reduce the ...

Recent Advances in Phase Change Energy Storage Materials: ...

Phase change energy storage materials (PCESM) refer to compounds capable of efficiently storing and releasing a substantial quantity of thermal energy during the phase transition ...

A review on container geometry and orientations of phase change

This review focuses on PCM's melting and solidification in different container geometries and their orientations for heat storage in solar thermal systems. The thermal storage performance of ...

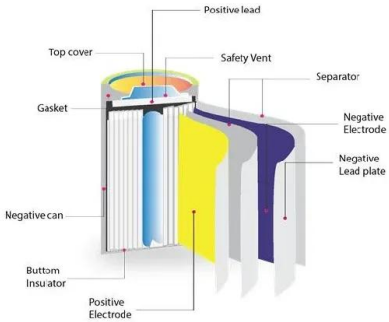


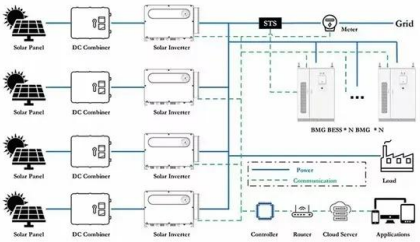
Solar Energy in the Oil and Gas Industry

With technological advancements, the need to explore new sources of energy in a world with ever-growing demands, and the challenges brought by climate change, renewables are an unavoidable ...

A review on phase change materials in different types of solar stills

Phase change materials can solve many of the problems mentioned above regarding solar stills by storing the heat energy of the sun during the day and releasing it during the phase ...





Phase change materials in solar energy applications: A review

Phase change Materials (PCMs) available in various temperature range have proved efficient in solar thermal energy storage situations. Incorporating PCMs in solar applications resulted ...

Review on the challenges of salt phase change materials for energy

When considering the best salt for use as a phase change medium, it is important to make a comparison for each of the available salt types. Table 3 summarizes the pros and cons of using ...

High-efficiency solar-thermal phase change storage driven by virtual

Abstract Phase change heat storage technology plays a crucial role in addressing the intermittent and fluctuating challenges associated with solar energy. This study presents a novel low-temperature ...

Experimental and numerical study of desalination using solar energy ...

The present work experimentally desalinate water and model a passive solar desalinator of 0.55 m 2 that uses phase change materials (PCM), assessing the effects of storing energy in 4.5 ...

Effect of Phase Change Material Heated by Solar Energy on the Flow

The present study aims to gradually reduce the viscosity of heavy crude oil by heating it using solar energy as clean energy. Solar water heater, PCM paraffin wax, heat exchangers, crude ...

On the integration of phase change materials with evacuated tube solar

But similar to other solar energy technologies, ETSCs are suffering from two main drawbacks associated with intermittency of solar radiation. Phase change materials (PCMs) have ...

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