High-temperature trough solar integrated system

In the present paper, integration of a Kalina cycle for high temperature and pressure applications with parabolic trough solar collectors is proposed and analyzed.

To stabilize the system operation, the solar receiver has to assure a proper thermal inertia. Therefore, a solar receiver integrated with a short-term storage system based on high ...

Solar thermal technologies are categorized as low-temperature, medium-temperature, or high-temperature. High-temperature solar thermal (HTST), also known as concentrating solar ...

However, the parabolic trough collector (PTC) system still encounters a knotty problem of considerable radiation heat loss caused by its high operating temperature (generally above ...

Abstract In this study, thermodynamic analysis of solar-based hydrogen production via copper-chlorine (Cu-Cl) thermochemical water splitting cycle is presented. The integrated ...

Therefore, this research offers a thermodynamic evaluation of a novel integrated system driven by solar energy that aims to produce power, heating and freshwater.

A spectral splitting parabolic trough concentrator is developed in which incident solar radiation is first split and then concentrated. Based on the measured optical data of ...

Xuejing, Z. Mathematical modeling and performance analysis of an integrated solar heating and cooling system driven by parabolic trough collector and double-effect ...

Parabolic trough collector (PTC) is a type of solar system that generates thermal energy by concentrating solar radiation on the surface of a circular receiver tube. However, the ...

Among the existing technologies, solar thermal tech-nologies, particularly organic Rankine cycle (ORC) systems integrated with parabolic trough collectors (PTCs), show significant potential ...

Figure 3 illustrates a flow diagram of the simulated CSP and high temperature electrolysis (CSP-HTE) process, including key components of the CSP system, O-SOEC subsystem, heat ...

Request PDF | Thermodynamic and economic analyses of hydrogen production system using high temperature solid oxide electrolyzer integrated with parabolic trough ...

High-temperature trough solar integrated system

In this work, a novel PTC system integrated with solar photovoltaics (PTC-PV) is proposed. The PV panels have a narrow width which is the same as the diameter of the parabolic trough ...

The present work deals with numerical and experimental investigations to study the performance of a small-scale solar PTC integrated with thermal energy storage system.

Parabolic trough solar receivers as the heat-collecting elements (HCEs) are the key parts of PTC, but face with a knotty problem that is exploding radiative heat loss under ...

Article on Energy, exergy, economic and environmental (4E) evaluation of a solar-integrated energy system at medium-high temperature using CO2 as the parabolic trough ...

This study presents a detailed energy, exergy, and economic analysis of an integrated solar power system combining a Parabolic Trough Collector, an Organic Rankine ...

Exergy and exergoeconomic analyses of novel high-temperature proton exchange membrane fuel cell based combined cogeneration cycles, including methanol steam reformer ...

This paper proposes a solar-integrated energy system at medium-high temperature (i.e., working temperature >300 °C) for power generation, desalination, and sodium hydroxide (NaOH) ...

12 hours ago· The system incorporates a thermal storage tank to ensure continuous operation during periods of insufficient solar energy. This paper investigates single-flash, double-flash, ...

High-temperature solar technology (HTST) is known as concentrated solar power (CSP). It uses specially designed collectors to achieve higher temperatures from solar heat that can be used ...

This paper presents a comprehensive analysis of this medium-high temperature solar-integrated energy system in terms of energy, exergy, economics, and environment.

The major focus is on construction and thermal performances of solar collectors integrated with heat pipe used for water heating (domestic and Industrial purpose), air/space ...

Abstract In this study, thermodynamic performance assessment of solar-driven integrated HTSE for hydrogen production is discussed in detail. The system consists of a solar ...

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