

In the context of ORC-based solar systems, two configurations are possible: the direct steam generation (direct solar organic Rankine cycle system or DSOS), that is, utilizing the solar collectors as evaporators in the ORC; and the indirect generation (indirect solar organic Rankine cycle system or ISOS), in which there is the interposition of a heat exchanger ...

According to the working temperature of solar energy utilization system, it can be divided into three types: low-temperature heat utilization ($<100^{\circ}\text{C}$), mid-temperature heat utilization (100°C ...

By comparison, concentrated solar power (CSP) exhibits similarly low or even lower efficiencies ($\sim 15\%$ for solar thermal power generation systems with a central tower receiver concentrator [7]) because significant losses (i.e., irreversibilities) typically occur during capture (e.g., from sunlight to heat), transport (e.g., with heat transfer fluid), and conversion (e.g., from ...

Low temperature solar thermal energy is an innovative and sustainable way to take advantage of solar radiation for multiple applications. This approach uses solar collectors to capture the sun's heat and convert it into ...

7. Thermal energy storage (TES) TES are high-pressure liquid storage tanks used along with a solar thermal system to allow plants to bank several hours of potential ...

This dissertation discusses the design and development of a distributed solar-thermal-electric power generation system that combines solar-thermal technology with a moderate-temperature Stirling engine to generate electricity. The conceived system incorporates low-cost materials and utilizes simple manufacturing processes.

Unlike PV power generation, solar thermal power plants integrate thermal energy storage (TES) technologies to address the intermittent nature of PV power output. Heat absorbed by the thermal storage medium is partly used for heat exchange to drive steam turbines, while the remainder is stored, ensuring stable, continuous power generation during day-night cycles.

The regulation capacity of concentrating solar power (CSP) plants can rival that of conventional thermal units. CSP plants can participate in peak load and frequency regulations timely and deeply, which improves the flexibility of the power system. Thus, CSP is a promising renewable energy generation technology. Based on

energy, solar thermal power generation has the characteristics of high generating efficiency, low cost of power generation, good power quality, and large-scale heat storage. Relative to ...

Corresponding author's e-mail:593617953@qq Solar thermal power generation technology research Yudong Liu1, Fangqin Li1, and Jianxing Ren1, Guizhou Ren1, Honghong Shen1, and Gang Liu1 1Colleg of Energy and Mechanical Engineering, Shanghai University of Electric Power, Shanghai, China Abstract ina is a big consumer of energy resources.

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