

The role of solar thermal power generation equipment

How do solar thermal power systems work?

All solar thermal power systems have solar energy collectors with two main components: reflectors (mirrors) that capture and focus sunlight onto a receiver. In most types of systems, a heat-transfer fluid is heated and circulated in the receiver and used to produce steam.

What are the applications of solar thermal system?

Apart from power generation and process heating, the solar thermal system can also be used for various applications such as air-conditioning, space heating, cooling, cooking, desalination, etc. (Kalogirou, 2004).

4.1. Solar steam augmentation with conventional fossil fuel fired power plant

Can solar thermal energy be used for process heat applications?

Therefore, the solar thermal energy system is considered to be one of the attractive solutions for producing thermal energy for process heat applications. Hence, there is tremendous opportunity to replace conventional energy sources with solar thermal energy systems.

Which thermodynamic cycle is used for solar thermal power generation?

Rankine, Brayton, and Stirling cycles are commonly used thermodynamic cycles for solar thermal power generation. The integration of thermal energy storage and hybridization of solar thermal energy systems with conventional power generation systems improves the performance and dispatchability of the solar thermal systems.

Are solar thermal energy systems suitable for industrial applications?

The solar thermal energy systems performance for industrial applications are analyzed in the earlier previous studies to identify suitable solar thermal technology for various industrial process heat applications and are briefed in Table 2.

What are solar thermal technologies for power generation?

This chapter also covers the recent developments in solar thermal technologies for power generation. In recent times, solar thermal technologies are integrated with conventional fossil-fuelled power plants as well as other renewable energy sources such as biomass, geothermal to improve its performance.

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