

Application status of solar thermal power generation

Is solar thermal energy a suitable solution for process heat applications?

Heat energy is preferred as compared to electrical energy to meet the energy requirement of various applications in the process industries. Therefore, the solar thermal energy system is considered to be one of the attractive solutions for producing thermal energy for process heat applications.

What are the industrial applications of solar thermal energy?

In this article, an extensive review of various solar thermal energy technologies and their industrial applications are presented. The following industries are covered: power generation, oil and gas, pulp & paper, textile, food processing & beverage, pharmaceutical, leather, automotive, and metal industries.

How to integrate solar thermal energy systems with industrial processes?

The integration of solar thermal energy systems with the industrial processes mainly depends on the local solar radiation, availability of land, conventional fuel prices, quality of steam required, and flexibility of system integration with the existing process.

How solar thermal system can be used in process industry?

The solar thermal system can be integrated with the central steam/hot water supply system of the process industry (Fig. 2). 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.

What are the different ways of solar energy thermal utilization?

Heating, hot water and thermal power generation are the more common ways of solar energy thermal utilization in EU [13,14]. At present, the solar water heater is the common way in China.

What is solar thermal energy augmentation?

Solar heat augmentation for existing fossil fuel power plants is one of the important cost-effective applications for solar thermal systems. Similarly, the solar thermal energy systems can be easily integrated with existing process industries to supply heat to either water pre-heating/steam generation.

Concentrating solar power systems (CSP) has significant potential to effectively convert solar energy into electrical energy via thermal energy utilization. Linear Fresnel ...

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 ...

Solar thermal power generation, as a high efficiency, excellent quality and high stability power generation, has

a very high prospects for development. Compared with other energy...

Solar photovoltaic power generation, as an environmentally friendly energy technology that converts sunlight into electricity, directly converts sunlight into electricity ...

Concentrating solar thermal power systems such as LFR and PTC can be used for digesting and captive power generation. The different qualities of steam can be withdrawn ...

Starting from the current situation of solar thermal power generation in the world, this paper briefly introduces the solar thermal power generation technologies such as ...

[12] The first year of solar thermal power generation in China -- a successful experiment in power generation of the Badaling solar thermal power station in Yanqing, ...

development status of solar power generation technology, mainly introduces solar photovoltaic power ... Solar-thermal power generation principle is that through ... application;(4) the tower ...

According to the working temperature of solar energy utilization system, it can be divided into three types: low-temperature heat utilization (<100 o C), mid-temperature heat utilization (100 ...

A state-of-the-art power cycle with a primary and a secondary heat transfer fluid and a two-tank thermal energy storage is used as a benchmark technology for electricity generation with...

3 ???· Solar thermal energy, which uses solar radiation to heat a fluid, produces direct heat for domestic and industrial applications and plays an important role in the decarbonization of heat ...

forms and characteristics of solar thermal power generation, introduces the application of solar energy at home and abroad, analyzes its development trends, and puts...

Solar thermal power plants have the ability to generate electricity continuously and can be stored or deployed. Currently, there are three main types of solar thermal power

The study considered cooling/heating load reduction and power generation over one year. The results indicated that the suggested BIPV/T double-skin facade system had the ...

A state-of-the-art power cycle with a primary and a secondary heat transfer fluid and a two-tank thermal energy storage is used as a benchmark technology for electricity ...

The research status and future development arrangement of solar power generation technology in various countries around the world are investigated. The principles, ...

Current application status and trend analysis of solar photovoltaic power generation in China [J]. Science and Technology Vision, 2014, 21 (25) : 265-265. Solar ...

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