

Analysis of the development trend of solar thermal utilization

What are the utilization techniques of solar energy?

Based on global distribution of solar energy and its feature, this paper discusses a review about solar energy's utilization techniques, mainly discusses the latest development of photo-thermal and photoelectric utilization technology, which are mature and widely used.

What is the development trend of solar energy utilization?

Through looking forward to the development trend of solar energy utilization from the aspects of improving efficiency, reducing cost, and diversifying utilization methods etc., we find that the utilization of solar energy resources has entered the fast track of development.

Is solar energy utilization on the fast track of development?

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What is solar energy utilisation?

Vision Solar energy utilisation is one of the most promising avenues for addressing the world's energy and environmental problems because of its many advantages, including its abundant and convenient availability, and its pollution-free and sustainable nature.

What are the challenges faced by solar energy production?

The identified challenges include developing new materials, enhanced performance, accelerated system installation and improved manufacturing processes, combining solar energy with other clean energy production and storage systems, and integrating solar energy utilisation with local energy utilisation patterns.

1. Past

Why is solar energy utilisation important?

Indeed, solar energy utilisation represents a tangible way for our society to continue developing and progressing since the total annual solar radiation received by Earth is more than 7500 times the world's total annual primary energy consumption of approximately 450 EJ .

Firstly, focus on the two main solar energy utilization modes, photovoltaic and photothermal, we systematically introduced the main types, research status and development trend of photovoltaic technologies, as well as the current situation and development trend of thermal power generation, building heating and refrigeration, seawater ...

Based on investigations done before in the field of solar energy utilization [166], it can be found that

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low-grade solar thermal energy could be effectively and efficiently utilized for the regeneration of adsorbent since the temperature range of solar thermal collectors and regeneration of adsorbent was well-matched in the low-grade temperature range [102]. Also, ...

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Semantic Scholar extracted view of "Solar thermal utilization in China" by Chaofeng Xiao et al. ... A cost-benefit analysis of the solar water heater industry in China indicates that it not only brings economic benefits to society but also environmental benefits to the earth, which is beneficial from both an environmental and economic perspective. Expand. 10 ...

Solar thermal system is fast developing for past two decades. Research has shown that, about 90% of the solar thermal systems developments are for residential applications. Its industrial ...

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Solar thermal systems include specific energy converters which are able to collect and transform the sun's radiation into available energy. This is possible with the use of solar thermal collectors, which are specific heat exchangers responsible for converting the received solar radiation into internal energy of an exchange medium (like air, water, oil, and ...

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