

Which solar power technologies can be used for sustainable electric power generation?

In this article, different solar power technologies have been reviewed which can be utilized for the global sustainable electric power generation. Major emphasis has been on solar photovoltaic (PV) and concentrated solar power (CSP) technologies. Their types, mechanism, efficiency and cost factors have been discussed.

Can solar power be used for sustainable electricity generation?

Solar power systems are relatively affordable and they are suitable for both urban and rural areas. With this background, solar power technologies which can be utilized for the development of a sustainable electricity generation have been thoroughly reviewed in this research work.

Is solar power a primary solution to green energy?

In the present scenario, when climate mitigation and sustainability are becoming major issues in the world; solar power highlights itself as a primary solution of green energy. U.S. Department of Energy. Integrated solar thermochemical reaction system.

Are photovoltaics a viable alternative to conventional power generation?

Additionally, photovoltaics' improved efficiency and production cost competitiveness have positioned them as mature alternatives compared to conventional power generation facilities. Therefore, there are two major plans to expand the solar energy supply globally.

Can wind and solar power generation replace thermal power generation?

Under a certain scale, the increase of wind and solar power generation can effectively substitute thermal power generation and strive for space for its own development. However, if the wind and solar power generation exceed certain level, the wind and solar power generation will promote the growth of thermal power generation.

What are solar power projects?

These projects involve complex renewable energy-based plants mixed with multiple renewable energies, including PV, wind, and CSP, to mitigate and regulate the power fluctuation of PV and wind through CSP with thermal energy storage (TES). Table 1 Concentrating solar power projects in the Asia/Pacific region

In addition, a comparison is made between solar thermal power plants and PV power generation plants. Based on published studies, PV-based systems are more suitable for small-scale power ...

There is a clear growth trend that can be seen in the solar PV industry, and solar systems will become an integral part of our society and thus our environments. In this context, ...

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Ajayi et al. (2016) conducted an assessment of solar and wind resources" potentials in Northern Nigerian and concluded that solar photovoltaic technology is a viable option to facilitate ...

The efficiency (η_{PV}) of a solar PV system, indicating the ratio of converted solar energy into electrical energy, can be calculated using equation [10]:
$$\eta_{PV} = \frac{P_{max}}{P_{inc}} \dots$$

We concentrate on the use of grid-connected solar-powered generators to replace conventional sources of electricity. For the more than one billion people in the developing world who lack access to a reliable electric grid, the cost of ...

For the generation of electricity in far flung area at reasonable price, sizing of the power supply system plays an important role. Photovoltaic systems and some other renewable ...

Solar energy--A look into power generation, challenges, and a solar-powered future. International Journal of Energy Research. 43(6031) DOI:10.1002/er.4252. ... REVIEW ...

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