

## SolarInvert Energy Solutions

# Analysis of the current status of container solar energy development



## Overview

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How has solar PV technology changed in 2022?

It is seen that the global weighted-average LCOE of solar PV technology reduced by about 89 % from 0.445 USD/kWh in 2010 to 0.049 USD/kWh in 2022. It is noticeable that the LCOE of PV technology has dropped into the range of fossil fuel electricity costs since 2014.

Is solar energy a future energy resource?

The utilization of renewable energy as a future energy resource is drawing significant attention worldwide. The contribution of solar energy (including concentrating solar power (CSP) and solar photovoltaic (PV) power) to global electricity production, as one form of renewable energy sources, is generally still low, at 3.6%.

Which countries have the most solar PV installed capacity in 2022?

In 2022, the most significant expansion in the solar PV market occurred in China, the US, and India, with increments of 86.1 GW, 17.8 GW, and 13.5 GW, respectively (IRENA, 2023). Fig. 2 shows the contribution of each continent in the world's solar PV installed capacity in 2018, followed by 2030 and 2050 based on IRENA's REmap analysis.

How many countries have not engaged in solar energy development?

Finally, within the group of 235 countries, it's seen that 30 nations, comprising around 12.8% of the total, have yet to engage in solar energy development. These 30 countries collectively have a population of 44 million. Out of these 30 countries, 23 (approximately 76.7%) have not documented any academic research in the field of solar energy.

What is the global LCOE for solar PV technology?

The presented data indicates that the global weighted-average LCOE for solar PV technology was approximately 0.05 USD/kWh in 2022, projected to further

decrease to a range of 0.014–0.05 USD/kWh by 2050. Currently, CSP technology has the highest LCOE at 0.118 USD/kWh among renewables.

Why do solar systems have a high capacity factor?

The observed growth in the capacity factor is mainly due to three key factors, 1) performance enhancement of the systems by reducing losses, 2) using solar tracking systems, and 3) tendency towards deployment in areas with higher radiation levels. Fig. 7.

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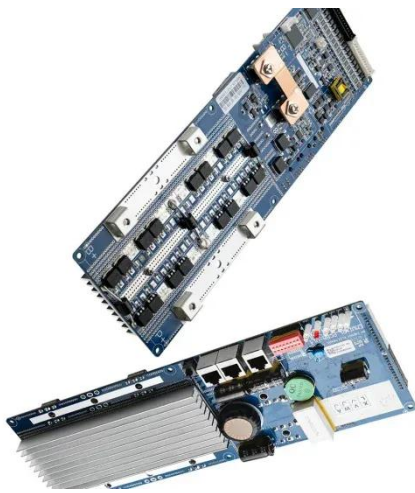
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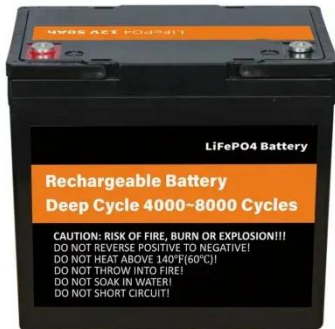
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