

Comparison of 100kWh Off-Grid Solar Containers in Environmental Protection Projects





Overview

With strongly decreasing prices of photovoltaics (PV) and battery storage in the past decade, together with incentives for modular construction in China, shipping containers have been suggested as suitable build.

Do hybrid solar PV systems reduce capacity requirement?

A reduction in capacity requirement, albeit to a lesser extent, is observed for the solar PV component (55% compared to the stand-alone PV system). More significantly for the batteries, 70% less capacity is required in the hybrid systems compared to the equivalent stand-alone systems.

Can a solar PV system meet the household electricity needs?

Combined with battery storage, they are capable of meeting fully the household electricity needs. In the hybrid systems, combining the wind turbine and solar PV, the former provides 77% of the household load and the latter the remaining 23%, based on the simulations in HOMER (see Fig. S1 in the SI).

Is a household-scale PV system environmentally sustainable?

The results suggest that a household-scale PV system integrated within a micro-grid with community-scale wind turbines and Li-ion batteries is environmentally the most sustainable configuration. 1. Introduction As the cornerstone of modern society, access to energy has been linked to improvements in health, education, and social welfare .

Can a residential container home be off-grid?

Off-grid simulations of residential container homes are lacking in the literature. The module reduces construction waste and CO₂-emissions and educates for degrowth. Ventilation and heating are controlled based on ambient temperature, SoC, and time. Better energy efficiency, thermal comfort, and less dumped energy are achieved.



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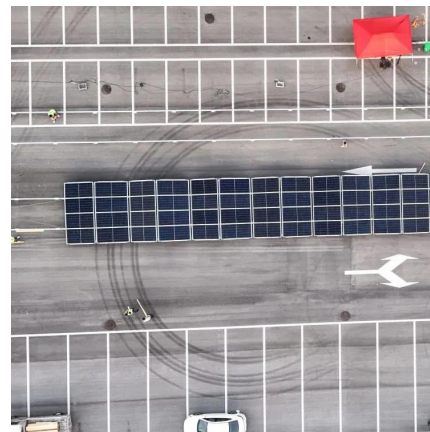


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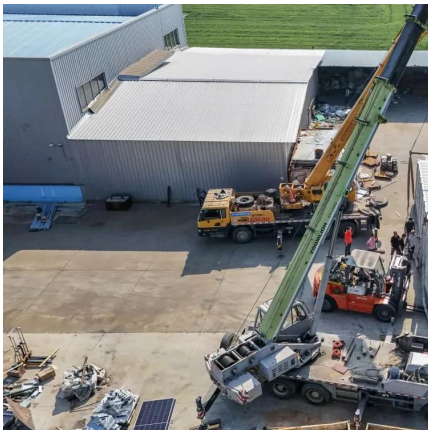
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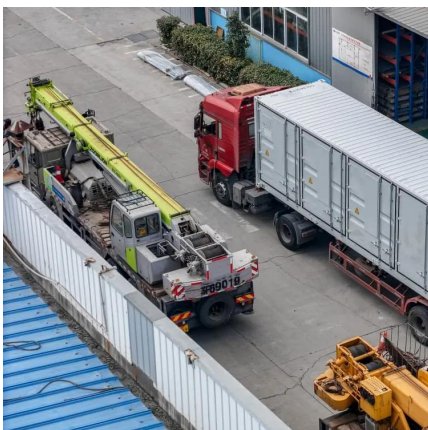
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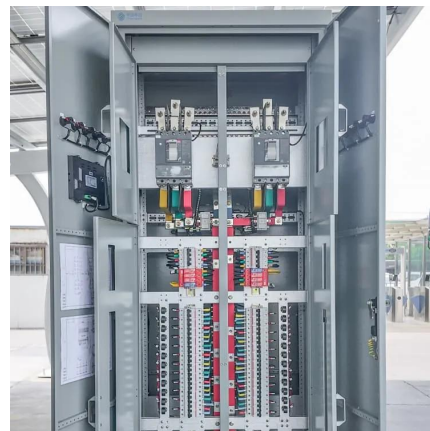
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