

Comparison of 100kWh photovoltaic container power generation in the catering industry with diesel power generation





Overview

What is the difference between PV size and WF capacity?

The PV size is half of the configuration (ii), while the WF capacity is reduced to almost zero. The algorithm converges on a configuration in which nighttime power is supplied by the TES storage, which remains large (111 MWh). On the contrary, the contribution of the EES is negligible. Figure 7. Optimal sizing for “Scenario 1”.

What is the complementarity of the three power generation systems?

The complementarity of the three power generation systems (CSP, PVs, and WF) is elucidated in Figure 8 c. In summer, the TES of the CSP plant enables full load coverage by storing solar energy during the day and making it available at night. In winter, part of the night load is supplemented by the backup genset.

What is the optimum power output for a solar system?

The optimum for case (i) exhibits a power block capacity of 10 MW and a TES of 115 MWh. The solar field has a total aperture area of 300,000 m². The design power output is much higher in case (ii) (40 MW PV + 18 MW WF), while the electrochemical energy storage capacity is very low (66 MWh).

How much does CSP cost per kWh?

The new minimum cost of 0.1153 USD/kWh underscores the importance of integrating CSP and PV technologies to meet the very stringent conditions of high renewable penetration and improved grid stability. 1.



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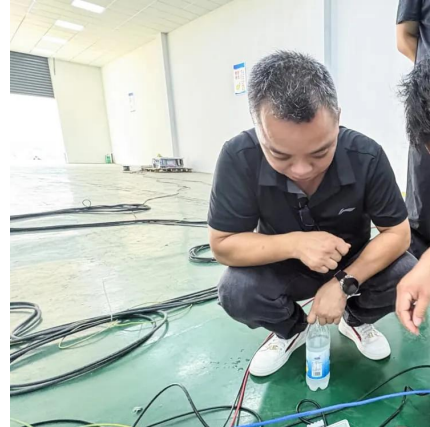




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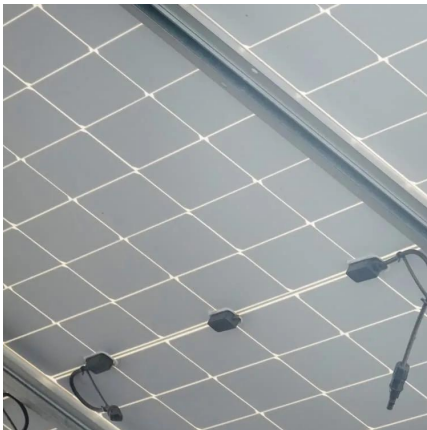




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