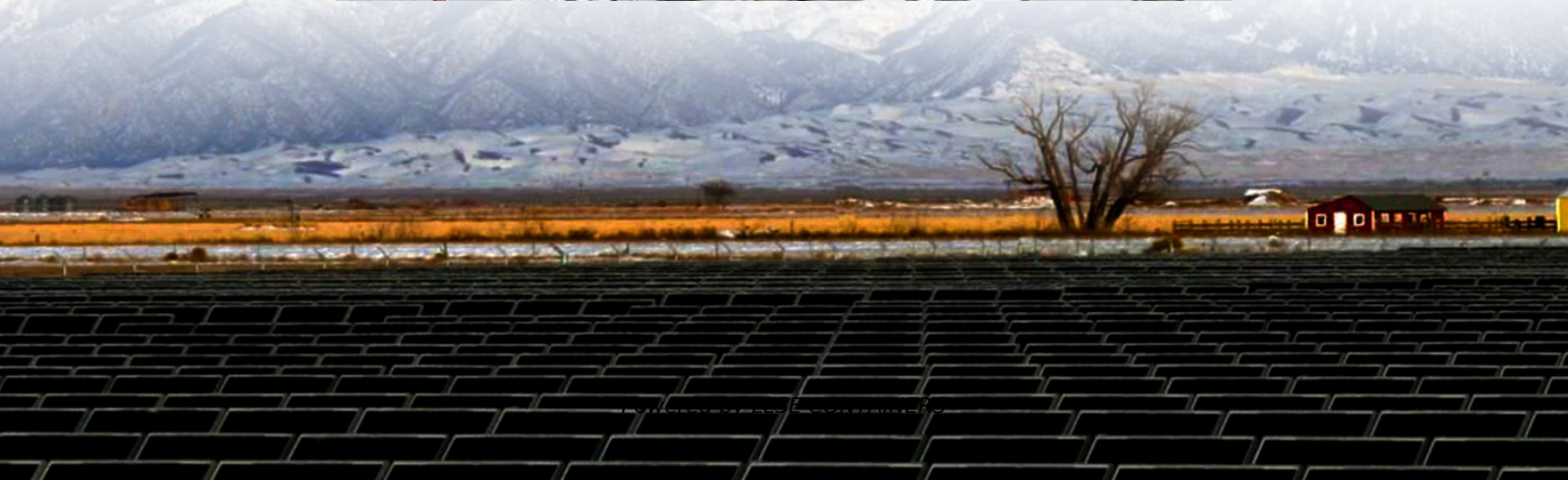


Comparison of 200kWh Off-Grid Solar Containerized Generator and Diesel Power Generation





Overview

What is the difference between a solar PV and a diesel generator?

The solar PV and wind system are combined to provide renewable energy, while the diesel generator serves as an auxiliary unit to fulfill the electric demand during unforeseen fluctuation of sunshine and wind speed.

Are photovoltaic panels suitable for off-grid systems?

Three off-grid systems have been proposed: (i) Photovoltaic (PV) systems with a diesel generator; (ii) Photovoltaic systems and battery storage; and (iii) Photovoltaic systems with diesel generator and battery storage. For this analysis, different size of photovoltaic panels were tested and the optimal size in each scenario was chosen.

Does a hybrid photovoltaic-diesel-battery save energy?

Optimization results have revealed that the hybrid photovoltaic-diesel-battery would be a notable role with a cost of energy (COE) of 0.5121 (Canadian Dollar/kWh) and 22% of fuel savings while comparing with the existing diesel system (Kaluthanthrige et al., 2019).

Can a diesel generator be used as a microgrid?

Since the diesel generator is only used as a backup, this type of microgrid can achieve a renewable energy penetration rate of up to 100%. However, the storage system needs to be relatively large, and due to the high cost of energy storage systems, the return on investment for this type of microgrid is relatively low.



Comparison of 200kWh Off-Grid Solar Containerized Generator and



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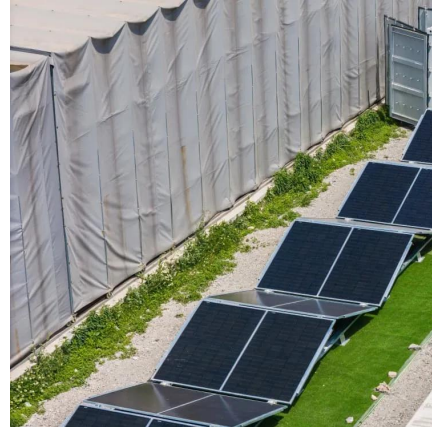
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