

# **What are the hybrid energy sources for solar solar container communication stations in Saudi Arabia**





## Overview

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Can Saudi Arabia integrate hybrid energy systems?

With its vast solar irradiance and considerable wind resources, Saudi Arabia offers unique opportunities for integrating hybrid energy systems. Various studies, such as Mansir et al., have underscored the viability of these systems.

Do hybrid renewable hydrogen systems exist in Saudi Arabia?

This study aims to address this gap in the literature by conducting a comprehensive techno-economic evaluation of hybrid renewable hydrogen systems across three geographically distinct locations in Saudi Arabia: Al Jouf, Yanbu, and Riyadh.

Are grid-connected and off-grid hydrogen systems feasible in Saudi Arabia?

The techno-economic feasibility of grid-connected and off-grid hydrogen systems in three regions of Saudi Arabia—Yanbu, Al Jouf, and Riyadh—is evaluated in this study. HOMER simulations optimized system configurations, incorporating location-specific solar irradiance, wind resources, temperature profiles, and component costs.

Does Riyadh have a hybrid hydrogen system?

Riyadh, the capital of Saudi Arabia, located at 24° 42.81' N, 46° 40.52' E, presents a unique opportunity to evaluate the viability of hybrid renewable hydrogen systems in a primary metropolitan environment. The city has a yearly average solar irradiation of 5.77 kWh/m<sup>2</sup>/day, reaching a high of 7.87 kWh/m<sup>2</sup>/day in June (Fig. 8).



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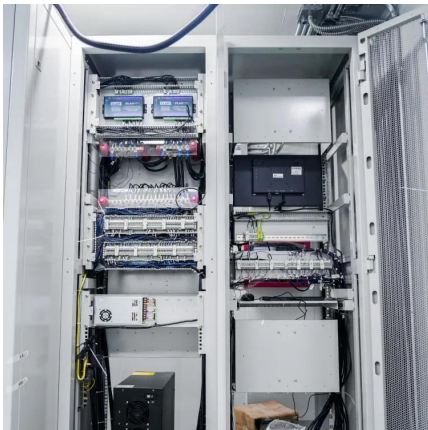
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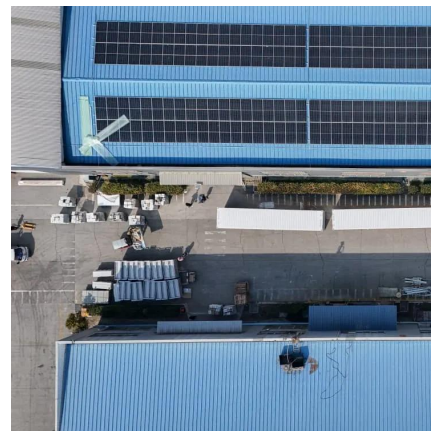


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