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Rural solar grid-connected power generation case



Overview

This paper analyses a hybrid microgrid case study in a rural area integrating PV-biomass-BESS using mathematical models and simulations in MATLAB/Simulink Version 2025a, characterizing local resources (climate and biomass), and evaluating irradiance, temperature, and demand. This paper analyses a hybrid microgrid case study in a rural area integrating PV-biomass-BESS using mathematical models and simulations in MATLAB/Simulink Version 2025a, characterizing local resources (climate and biomass), and evaluating irradiance, temperature, and demand. Solar energy offers a promising renewable alternative to traditional fossil fuel-based electricity generation for powering agricultural activities in remote rural areas. Several studies have demonstrated the technical and economic feasibility of photovoltaic, solar thermal, and hybrid solar systems. Over the past decade, rural development in India has increasingly intertwined with the adoption of decentralised solar energy solutions, including home systems, mini-grids, pumps, and various productive-use appliances. They're suitable for village-scale electrification, allowing modular growth over time. Source: International Energy Agency (IEA), Off-Grid Market Trends Report 4. In the present study, design of hybrid renewable energy system (HRES), i.

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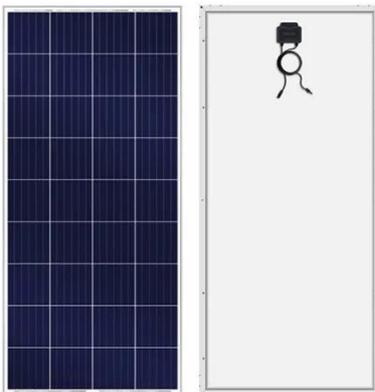
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Implementation of solar system for electricity generation for rural

Abstract Solar energy offers a promising renewable alternative to traditional fossil fuel-based electricity generation for powering agricultural activities in remote rural areas.



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Analysis of a Sustainable Hybrid Microgrid Based on Solar Energy

This integrated approach to solar generation, biomass management, and storage for efficient and sustainable supply is applied and validated in a theoretical case study developed in the ...

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