Thimphu Solar Energy Intelligent Control System

How effective is a ThD control strategy for grid-tied multi-functional solar energy systems?
In terms of THD,the proposed approach also yields the lowest distortion at 1.08 %,indicating superior power quality. These results clearly demonstrate that the proposed control strategy offers both precision and enhanced power quality,making it more effectivefor grid-tied multi-functional solar energy systems.

How to monitor maximum energy points efficiently in photovoltaic and wind power systems?
To monitor maximum energy points efficiently,the P&O algorithmwas used to control photovoltaic and wind power systems. The battery storage system is organized via PI controller. This study aimed to improve the energy quality and ensure that the optimal voltage level is maintained.

Can MATLAB/Simulink control energy flow between loads?
We verified the performance of the proposed controller under variable conditions of solar radiation, wind speed, and load changes using MATLAB/Simulink. The second goal of this work is the intelligent management of energy flow between loads. We proposed an algorithm based on fuzzy logic to manage loads.

How can photovoltaic and wind systems achieve maximum power?
The maximum possible power of the photovoltaic and wind systems can be achieved thanks to the proposed MPPT technique,which has shown good results compared with the techniques mentioned in the literature.

The proposed hybrid solar energy system uses AI blends machine-learning-driven solar tracking, material upgrade with intelligence, adaptive photovoltaics, and energy ...

The rising global demand for power, allied with the compelling necessity to shift to sustainable energy sources, has heightened attention on renewable energy technologies, ...

The advancement of solar energy systems requires intelligent, scalable solutions that adapt to dynamic environmental ...

Advanced remote supervision and control applications use artificial intelligence approaches and expose photovoltaic systems to ...

In the energy-saving schemes proposed earlier, the basic idea is to complement the existing pump running on a grid that consumes energy beyond expectation with the new ...

An Internet of Things (IoT) the environment to collect consumer data on energy usage and consumption, a forecast-based intelligent energy management system, and data ...

Advanced remote supervision and control applications use artificial intelligence approaches and expose photovoltaic systems to cyber threats. This article presents a detailed ...

This study examines the importance of artificial intelligence in facilitating continuous power supply to clients using a battery system, ...

In this paper, we propose a dynamic energy management system (EMS) for a solar-and-energy storage-integrated charging station, taking into consideration EV charging demand, solar ...

This paper addresses the smart management and control of an independent hybrid system based on renewable energies. The ...

Discover how machine learning is reshaping solar forecasting, uncover the potential of autonomous systems in energy storage, and explore the role of AI in crafting smarter, more ...

This study examines the importance of artificial intelligence in facilitating continuous power supply to clients using a battery system, hence emphasizing its significance in energy ...

My recent study assessed the potential of rooftop solar PV systems in Thimphu, designing and simulating a 12 kWp grid-tied system using PVSYST. The results showed strong solar ...

With the increasing demand for renewable energy solutions, intelligent solar energy systems have emerged as a key innovation to optimize energy generation and utilization. This project ...

Complex control structures are required for the operation of photovoltaic electrical energy systems. In this paper, a general review of ...

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