

Can photovoltaic and electric vehicles charge in integrated DC microgrids?

The power of photovoltaic (PV) and electric vehicles (EV) charging in integrated standalone DC microgrids is uncertain. If no suitable control strategy is adopted, the power variation will significantly fluctuate in DC bus voltage and reduce the system's stability.

Are DC microgrids effective power control and management frameworks?

Abstract: The increasing prominence of DC microgrids (MGs) in modern power systems necessitates effective power control and management frameworks, particularly for integrating renewable energy sources such as photovoltaic (PV) systems.

What is dc microgrid?

Some of the renewable energy sources such as solar and fuel cells produce DC power which is suitable for most of the existing equipment and devices such as computers, phones, LED lamps, and even electric vehicles work on DC power, DC microgrid presents itself as a more feasible alternative over AC microgrid.

What is a control system in a dc microgrid?

The main goal of incorporating a control system within a DC microgrid is to ensure several actions such as voltage regulation, proper current sharing, import and export of power, management energy storage, protection of equipment, decreasing the loss of power, minimizing the cost of operation (Yang et al., 2017).

The ANN-PSO controller is integrated within a PV-battery microgrid system and enables efficient tracking of the maximum power output while minimizing oscillations.

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The "dual carbon" strategy has drawn attention to distributed PV systems for their flexibility and variability, but the rising need for direct-current (DC) loads on the load side has created ...

This paper presents a robust DC microgrid model integrating solar photovoltaic (PV) arrays, proton exchange membrane fuel cells (PEMFCs), and lithium-ion batteries, designed to ...

A Microgrid (MG) system is a low voltage (LV), medium voltage (MV), or high voltage (HV), power network that includes distributed energy sources (DERs) like photovoltaic (PV) systems, wind ...

In this paper, the photovoltaic-based DC microgrid (PVDCM) system is designed, which is composed of a solar power system and a battery connected to the common bus via a boost ...

A DC Microgrid has many advantages over AC Microgrid, because it needs only few power converters with higher system efficiency and easier interface of renewable energy sources to ...

Variations in sunlight intensity, atmospheric temperature, and other variables have a big effect on the performance of photovoltaic (PV) systems. This paper presents a novel Walrus ...

The advantages of DC distribution over AC distribution, combined with greater penetration of photovoltaic (PV) systems, have enhanced the popularity of DC microgrids. With the ...

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