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Patent Search

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Abstract:

The presented invention introduces an advanced electric vehicle (EV) charging system that seamlessly integrates photovoltaic (PV) solar power, grid electricity, and auxiliary battery storage to optimize charging efficiency and energy utilization. By dynamically adjusting charging modes based on real-time conditions such as PV output, grid availability and EV battery status, the system aims to enhance energy efficiency, reduce reliance on the grid, and lower overall charging costs. With multiple charging modes and a user-friendly interface for customization and real-time monitoring, this comprehensive solution supports sustainable transportation practices and contributes to the adoption of renewable energy sources in the EV charging infrastructure.

Complete Specification

Description: The present invention pertains to the field of electric vehicle (EV) charging systems, specifically those that integrate photovoltaic (PV) solar power and the electrical grid. The invention focuses on optimizing EV charging strategies through dynamic and efficient management of PV-generated electricity, grid power, and auxiliary battery storage. This integration aims to enhance energy efficiency, reduce reliance on the electrical grid, lower charging costs, and promote the use of renewable energy sources.

BACKGROUND OF THE INVENTION

The following description of related art is intended to provide background information pertaining to the field of the disclosure. This section may include certain aspects of the art that may be related to various features of the present disclosure. However, it should be appreciated that this section be used only to enhance the understanding of the reader with respect to the present disclosure, and not as admissions of prior art.

The rapid adoption of electric vehicles (EVs) has created a significant demand for efficient and sustainable charging solutions. Traditional EV charging systems primarily rely on electricity from the grid, which can be costly and place additional stress on the electrical infrastructure, particularly during peak demand periods. Additionally, the environmental impact of using grid electricity, which may be derived from non-renewable sources, is a growing concern.

PV solar power offers a renewable and environmentally friendly alternative for EV charging. However, the integration of PV solar power into EV charging systems presents

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