Environmental project uses solar-powered containers for bidirectional charging

Overview

In this project, we present a solar-based bi-directional EV charger that utilizes a combination of solar energy and lead-acid batteries to power the vehicle, along with a V2H system that allows the EV battery to discharge back into the grid. The proposed charger integrates solar power generation with bidirectional power flow capability, enabling the EV to not only charge. Truly 'green' Electric Vehicles (EVs) require renewables for charging. Hence, we have developed a bidirectional smart charging station for EVs with integrated solar electricity generation, increased efficiency and reduced costs. How?

The EVs are directly charged from PV panels on Direct Current. This report presents the design and implementation of a bidirectional four-switch synchronous buck-boost DC-DC converter for standalone solar battery charging applications. At the heart of V2H technology is. Significant Financial Returns: Homeowners can achieve substantial savings of $1,000-$2,500 annually through time-of-use arbitrage, while V2G participation offers revenue potential up to $9,000 per year in premium markets, creating compelling economic incentives for adoption.

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Jun 27, 2025 · Abstract: Bidirectional charging is a smart charging strategy enabling the controlled charging and discharging of battery electric vehicles (BEVs).

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