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Patent Search

Invention Title	Solar Rover: A Self Sustained Power Unit
Publication Number	10/2026
Publication Date	06/03/2026
Publication Type	INA
Application Number	202641021000
Application Filing Date	23/02/2026
Priority Number	
Priority Country	
Priority Date	
Field Of Invention	ELECTRICAL
Classification (IPC)	B60L8/00, H02J7/35, G05F1/67, B60K16/00

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Abstract:

The present invention discloses a Solar Rover, a self-sustained portable renewable energy unit designed for off-grid and mobile power applications. The system integ photovoltaic panels, a charge controller, battery storage, and an inverter within a mobile frame to generate, store, and deliver electrical energy. The proposed system converts solar energy into usable AC and DC power, enabling applications such as electric vehicle charging, disaster relief operations, and rural electrification. The sys incorporates MPPT-based energy management for improved efficiency and reliable performance under varying environmental conditions. Its portability, scalability, a friendly nature make it a viable alternative to conventional power sources. The invention significantly reduces dependence on fossil fuels and contributes to sustaina solutions.

Complete Specification

Description: The proposed Solar Rover system consists of the following major components:

1. Photovoltaic (PV) Array

A set of solar panels (approx. 320W capacity) converts solar energy into DC power. The panels are mounted on a tilted frame (~40°) for maximum solar absorption.

2. Solar Charge Controller

A 12V, 30A MPPT charge controller regulates voltage and current from the solar panels, ensuring:

- Efficient charging
- Overcharge protection
- Reverse current prevention

3. Battery Storage System

A 12V sealed lead-acid (SLA) battery (~45Ah) stores generated energy for use during:

- Nighttime
- Low sunlight conditions

4. Power Inverter

An 850 VA inverter converts stored DC power into AC power, enabling operation of:

- Household appliances

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Page last updated on: 26/06/2019