

# Design and Development of Portable Solar Power Unit

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**Abstract:** *This research paper proposes a novel solar power system comprising a sliding solar panel and a single-axis sun tracking mechanism, which can be coupled with a portable solar power unit for easy relocation based on power requirements. The system aims to optimize power generation potential by automatically adjusting the tilt angle of the solar panel based on the position of the sun, thereby increasing overall energy output. The sliding mechanism facilitates easy movement of the solar panel, making it an ideal solution for temporary installations or areas with limited space. The portable solar power unit offers flexibility in power requirements, allowing users to relocate the system as per their needs. The study presents a detailed analysis of the proposed system's efficiency and performance, with promising results that could potentially make it a cost-effective and sustainable solution for power generation in various settings. Furthermore, the proposed system includes a trolley-mounted portable solar power unit for ease of transportation, providing a stable and secure base for the solar panel and power unit, ensuring optimal performance and durability. The study highlights the potential of the system in promoting sustainable and cost-effective power generation in various settings*

**Keywords:** Solar Module, Solar Energy, Sun Tracking, Portable Solar Power Unit.

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