Portable Sun Tracking Solar Power Kit

Keyzer, Fritz

Senior, Josiah

An increasing human population needs more energy. The purpose of this project was to show that solar power could meet current energy demands and that a sun tracking solar charger could be more efficient in meeting energy demands. Three prototype models were made. The first tested a proof of concept, determining the benefit of tracking. Prototype two was created to improve on certain design flaws. Both early prototype models were impractical to transport and stow away and they utilized less efficient methods of moving the photovoltaic panels, although the sun tracking worked well. The circuitry and interface was not simple to understand. The solution was to build a completely self-contained system into a durable container for easy transportation and storage. Inside the container were the batteries, the photovoltaic panel and a programmable circuit board which allowed for control of the servo motors which set the photovoltaic panel at different angles. Prototype three utilised more efficient methods of angling the photovoltaic panels using low power servo motors. It contained different circuitry and the interface was safe and user friendly and sun tracking capabilities improved efficiency by roughly 45% compared to regular stationary mounted photovoltaic panels. Prototype three fulfils the required criteria and design by being portable. It provides more than sufficient power to charge small electronic devices and batteries and to powering two lights. The device is also user friendly. Almost no changes need to be made to the final design as it fulfilled the project's engineering goals.

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