

Design and Construction of a Remote Controlled Car as a Solar Powered Lawn Mower

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ABSTRACT

This research aims to design and develop a solar-powered lawn mower system based on a remote-controlled (RC) car platform. The device is designed to be operated remotely using a gamepad-based controller and to function by utilizing solar panels to charge its battery. The system consists of key components such as a 50 Wp solar panel, two 12V 12Ah batteries, DC gearbox drive motors, a brushless DC cutting motor, Arduino Uno, ESP32, INA219 and INA226 sensors, and a data logger system. Test results indicate that the system operates stably. The solar panel is capable of generating a voltage of up to 16.56 V and a maximum current of 2.68 A. The maximum power output reaches 42 W with an average efficiency of 14%. The battery provides a stable power supply, with a peak voltage of 12.25 V and a maximum current of 4.3 A. The cutting system is capable of trimming grass from a height of 5 cm down to 0.5 cm. This system offers ease of use, especially for elderly users or people with physical disabilities, and serves as an environmentally friendly alternative to conventional fuel-powered lawn mowers.

Keywords : lawn mower, Solar-powerer, remote-controlled car, solar panel, Arduino Uno, ESP32, INA219 sensor, INA226 sensor, data logger, DC gearbox motor, brushless DC motor.