

Solar panel cleaning Robot

Abstract

We designed and built an automated self-cleaning solar panel. The panel detects the presence of an obstruction shading a cell, and actuates a cleaning mechanism that cleans off the obstruction and, therefore, restores the panel to normal capacity. To power the cleaning mechanism, we built our own power supplies which are supplied by a 12V battery. When required, this battery is charged by solar power when the cleaning mechanism is idle.

Introduction

There is an urgency in improving the efficiency of solar power generation. Current solar panels setups take a major power loss when unwanted obstructions cover the surface of the panels. The obstruction turns the shaded cell into a resistor, causing it to heat up and consume extra power. To address this issue, we have successfully engineered a self-cleaning solar panel. This specific panel detects the obstruction with a Differential Measurement Unit (DMU). It makes the decision from the Microcontroller unit to either clean the panel with the Wiper and Sprayer Mechanism or continue to charge the battery with the Battery Charger. Our mechanism to combat the power loss is unique, self-reliant, and easy to use.

Block Diagram :



