

Design of an Automatic Solar Panel Cleaning System

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ABSTRACT

Cleanliness of solar panels is one of the factors that affect the energy production of a solar power plant. Solar panel cleaning is a solution to keeping solar panels clean so that energy production can be optimal. This automatic cleaning system is very suitable to be applied to solar panels whose reach position is quite difficult during the cleaning process, because manual cleaning has several disadvantages such as the risk of worker injury, because the position of the solar panels tends to be higher, and difficulty moving due to limited distance so it is more time efficient. The purpose of this study was to determine the effect of the solar panel automatic cleaning system on the output power value, the efficiency of the solar panel, and the power consumption of the cleaning system. The research methodology was carried out by making a solar panel cleaning tool using a DC servo motor as a wiping device and a DC motor pump as a water sprayer, which is controlled using an Arduino Uno microcontroller. The cleaning tool is supplied by a 12 V 12 Ah battery with a 50 Wp solar panel. The results of this study indicate that the solar panel cleaning tool has an effect on the output power and the resulting efficiency, which has a comparison value with panels that are not cleaned respectively, namely 1.75 watts and 0.62%.

Keywords: *cleaning tool, solar panel, output power, efficiency.*