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Solar Panel Cleaner Using Vibrator and Air Blower for Desert Location

Pramod Guarav[1], Amruta Salavi[2], Sneha Pavane[3], Pranil Sutar[4], Ritika Hugar[5], Priya Kamble[6]
Professor, Sanjeevan Engineering & Technology Institute, Panhala, Maharashtra[1]
Students, Sanjeevan Engineering & Technology Institute, Panhala, Maharashtra[2,3,4,5,6]

Abstract: *Solar panel is vulnerable to accumulated dust on its surface. The efficiency of the solar panel gradually decreases because of dust accumulation. Accumulation of dust and debris on even one panel in an array reduces their efficiency in energy generation considerably and emphasizes the need to keep the panel's surface as clean as possible. In this paper, a smart panel cleaning system for PV that provides a cost-effective and scalable solution for the removal of soil and dirt. It will automatically and remotely remove the dirt at a fraction of the cost of manual cleaning. In this paper, an Arduino based solar panel cleaning system is designed and implemented for dust removal. The proposed solar panel cleaner is waterless, economical and automatic. Two-step mechanism used in this system consists of an exhaust fan which works as an air blower and a vibration to detached the dust from the panel surface. Since, the system does not need water to clean solar panel, it avoids the wastage of water and effective in desert areas. In terms of daily energy generation, the presented automatic-cleaning scheme provides about 30% more energy output when compared to the dust accumulated PV module.*

Keywords: Solar panel, Cleaning, Efficiency, Dust, Air blower, etc.

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