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Design and Fabrication of Solar Panel Cleaning Mechanism

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Abstract: *The increasing energy demands and the need forefficient utilization of renewable energy sources, such as solarpower, have highlighted the importance of conserving energy.However, dust accumulation on photovoltaic (PV) modules poses a significant challenge to the reliability and efficiency ofsolar panels. The presence of dust reduces the radiation reaching solar cells, resulting in power losses that can reach 4.4% daily and over 20% during prolonged dry periods. The losses vary throughout the day based on the sunlight angle andthe ratio between diffuse and direct radiation. To mitigate these efficiency losses, regular cleaning of solar panels is essential. In response to this need, a solar panel cleaning mechanism has been developed to automatically clean PV modules, increasingtheir efficiency and enhancing the productivity of solar power plants. This project aims to provide a cost-effective, scalable, and transparent cleaning system that not only improves performance but also ensures integrity and consistency. By reducing the reliance on manual labour for cleaning, thismechanism offers a practical solution for the removal of dust, benefiting solar panel users and supporting the goal of universal energy access.*

Keywords: Efficiency, Brush, Motor, solar panel, cleaner, improving efficiency of solar panel

REFERENCES

[1]. Sharvari Nikesh Ghate , Karan Rajendra Sali , Avinash Sureshprasad Yadav , Namita Sandeep Neman, Jagdish Chahande, "Design and fabrication of Automatic Solar Panel Cleaning System", International journal of machine tool and manufacture. ISSN(Online): 2319-8753 ISSN (Print): 2347-6710

[2]. Gargi Ashtaputre, Amol Bhoi, "Artificial Intelligence Based Solar Panel Cleaning Robot" e-ISSN: 2278-2834,p- ISSN: 2278-8735

[3]. Milan Vaghani, Jayesh Magtarpara, Keyur Vahani, Jenish Maniya, Prof. Rajiv Kumar Gurjwar "Automated Solar Panel Cleaning System using IoT"

[4]. F. Mejia, J. Kleissl & J. L. Bosch, 2013. "The Effect Of Dust On Solar Photovoltaic Systems", Energy Procedia 49 (2014), pp. 2370 – 2376

[5]. B. Shrihariprasath and Vimalathithan Rathinasabapathy, "A smart IoT system for monitoring solar PV power conditioning unit", Futuristic Trends in Research and Innovation for Social Welfare (Startup Conclave), World Conference on IEEE, 2016

[6]. Aslan Gholami, Ali Akbar Alemrajabi, Ahmad Saboonchi, "Experimental study of self-cleaning property of titanium dioxide and Nanospray coatings in solar applications" paper published in sciencedirect.com ,2017

[7]. R.S. Khurmi, J.K.. Rajput, "A Textbook of Machine Design",2017