

Photovoltaic Array Cleaning System Design and Evaluation

Authors : Ghoname Abdullah, Hidekazu Nishimura

Abstract : Dust accumulation on the photovoltaic module's surface results in appreciable loss and negatively affects the generated power. Hence, in this paper, the design of a photovoltaic array cleaning system is presented. The cleaning system utilizes one drive motor, two guide rails, and four sweepers during the cleaning process. The cleaning system was experimentally implemented for one month to investigate its efficiency on PV array energy output. The energy capture over a month for PV array cleaned using the proposed cleaning system is compared with that of the energy capture using soiled PV array. The results show a 15% increase in energy generation from PV array with cleaning. From the results, investigating the optimal scheduling of the PV array cleaning could be an interesting research topic.

Keywords : cleaning system, dust accumulation, PV array, PV module, soiling

Conference Title : ICSEEA 2021 : International Conference on Solar Energy Engineering and Applications

Conference Location : Vienna, Austria

Conference Dates : June 21-22, 2021