

عنوان مقاله:

Experimental Evaluation of the Effect of Inclination and Dust Deposition on Production Capacity of Photovoltaic Installations in West African Nations: Case Study in Mali Drame

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خلاصه مقاله:

The development of solar photovoltaic faces some difficulties in West African countries; such as: high cost of kW/h produced and long duration of return on investment. To that, there are some installation and operation aspects of Photovoltaic(PV) modules. In terms of installation, the incline plays a predominant role in the efficiency of a field photovoltaic. Indeed, the modules being fixed, it is, therefore, necessary to find the right incline so that they can capture the most solar energy every day. In terms of operation, PV modules need to be exposed to outside in order to operate under the most possibility of direct sunlight. Such equipment is therefore subjected to a natural climatic condition causing a great impact on its performance. This article deals with the influence of the operating parameters (optimal tilt and dust deposits) of PV modules in view of their improvement in West African countries such as Mali. After the choice of the cleaning by cloth and the different inclines of the modules were studied; the experiments were developed during the months of April-May-June, 2017. The results showed a reduction of PV modules from 4 to 14% of their efficiency was due to the accumulation of dirt on their capture surface. In addition, this study reveals an impressive result: a simple cleaning can save us energy about 140 FCFA/m²/month. Similarly, comparing with the outputs of the PV modules for different inclinations; it emerged that the optimal angle of inclination of the modules is (° slightly higher than the latitude of the study's place (about 15

کلمات کلیدی:

Photovoltaic modules, Average power, Dust deposition, Surface cleaning, Optimal incline

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