

Accepted Manuscript

Effects of Dust on Photovoltaic Measurements: A Comparative Study

A. Lay-Ekuakille, A. Ciaccioli, G. Griffo, P. Visconti, G. Andria

PII: S0263-2241(17)30411-6

DOI: <http://dx.doi.org/10.1016/j.measurement.2017.06.025>

Reference: MEASUR 4825

To appear in: *Measurement*

Received Date: 4 July 2015

Revised Date: 3 June 2017

Accepted Date: 21 June 2017

Please cite this article as: A. Lay-Ekuakille, A. Ciaccioli, G. Griffo, P. Visconti, G. Andria, Effects of Dust on Photovoltaic Measurements: A Comparative Study, *Measurement* (2017), doi: <http://dx.doi.org/10.1016/j.measurement.2017.06.025>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Effects of Dust on Photovoltaic Measurements: A Comparative Study

A. Lay-Ekuakille¹, A. Ciaccioli¹, G. Griffo¹, P. Visconti¹, G. Andria²

¹Department of Innovation Engineering, University of Salento, Lecce, Italy

²Department of Electrical and Information Engineering, Polytechnic of Bari, Bari, Italy

Tel: +39.0832.297822 Fax: +39.0832.297827, email: aime.lay.ekuakille@unisalento.it

Abstract – Installation of renewal energy plant is a vital question for safeguarding cities and human agglomerations against pollution and helping them in the effort to save conventional energy contribution. As it is a widespread issue, PV plants can be located everywhere even in a severe conditions on the proviso that no external depositions, covering and coating the solar module, can alter the photovoltaic efficiency. To solve the problem, practically speaking, diverse solutions are envisaged and among them there is a continuous cleaning of dust by means of water and special liquids. The research proposes a modelling of the effect of dust on efficiency using experimental measurements provided through MPPT (maximum power point tracker) installed in the measuring architecture. Dust covering the PV module reduces the solar irradiance affecting the energy conversion. A comparison has been performed between a clean PV module under MPPT variations and another one of the same technology (CdTe, cadmium telluride) with dust. Both acquisitions have been carried out simultaneously for around one month. Both measurement campaigns agree with the scientific literature.

Keywords: Photovoltaic measurements, Dust, Solar radiation, MPPT, Solar energy, Efficiency, CdTe module, Pollution.

1. INTRODUCTION

Thin-film CdTe PV module is generally used in area where the interest is to capture

Download English Version:

<https://daneshyari.com/en/article/5006411>

Download Persian Version:

<https://daneshyari.com/article/5006411>

[Daneshyari.com](https://daneshyari.com)