

Dust and Soiling Accumulation Effect on Photovoltaic Systems in Middle East and North Africa Region

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Abstract : Photovoltaic efficiency is highly affected by dust accumulation; the dust particles prevent direct solar radiation from reaching the panel surface; therefore a reduction in output power will occur. A study of dust and soiling accumulation effect on the output power of PV panels was conducted for different periods of time from May to October in three countries of the MENA region, Jordan, Egypt, and Algeria, under local weather conditions. This study leads to build a more realistic equation to estimate the power reduction as a function of time. This logarithmic function shows the high reduction in power in the first days with 10% reduction in output power compared to the reference system, where it reaches a steady state value after 60 days to reach a maximum value of 30%.

Keywords : solar energy, PV system, soiling, MENA

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