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Abstract

Photovoltaic system performance highly depends on environmental conditions. Hence system requirements to optimize energy yield are unique, and in most cases no relevant data are available to make implementation decisions. This is why monitoring of such systems is very essential for initial system evaluation, and continuous output optimization. This paper is the result of a thorough literature survey about existing performance monitoring system for photovoltaic panels, aiming to propose a system tailored for photovoltaic panels under the very particular environmental conditions experienced in the GCC region, as these countries are in an area with tremendous potential for development of solar energy projects. A wireless sensor network based monitoring system is proposed, that measures data relevant for desert climate like dust, temperature and humidity. A small-scale prototype is described, along with initial experimental results. © 2013 IEEE.

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