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Study of the effect of stochastic thermal cycles of a desert environment on the degradation of a photovoltaic cell

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A photovoltaic module is characterized by the electric power it delivers when conventionally subjected to standard conditions (1000 W / m², 25 °C). Unfortunately, this power suffers degradation over time. The climatic factors degrading these electric generators vary from one natural environment to another. We find that narrow stochastic thermal cycles in hot and dry environments (the Sahara of Algeria for example) are truly the majors responsible for the degradation of these PV devices. In this article, we want to predict the failure of photovoltaic cells of the polycrystalline type and the degradation of their electrical characteristics (especially the maximum power initiated) under the effect of the narrow thermal cycles, and Estimate their lifetimes when they operate in desert environments. The accelerated test technique is the only method to see the degradation in short durations, and to model the reliability of these devices.

Biography

M Boussaid focuses on experimental study on the degradation and aging of cells and photovoltaic modules during their operation in natural environments, a study that allows prediction and estimation of durations of life of a photovoltaic system. This represents a significant gain on one side of energy, and the economic cost for all users of this renewable energy on the other hand.

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