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Analysis of the Degradation of the I-V Curve of the PV Module in a Harsh Environment: Estimation of the Site-Specific Factor (Installation Area)

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Abstract : The economy of Central African countries is growing very fast, and the demand for energy is increasing every day. As a result, insufficient power generation is one of the major problems slowing down development. This paper explores the factors of degradation of the I-V curve of the PV Generator (GPV) in harsh environments, taking the case of two locals: Mongo and Abeche. Its objective is to quantify the voltage leaks due to the different GPV installation areas; after using the Newton-Raphson numerical method of the solar cell, a survey of several experimental measurement points was made. The results of the simulation in MATLAB/Simulink show a relative power loss factor of 11.8765% on the GPVs installed in Mongo and 8.5463% on those installed in Abeche; these results allow us to say that the supports on which the modules are installed have an average impact of 10.2114% on their efficiency.

Keywords : calculation, degradation, site, GPV, severe environment
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