

Development of Field-Applicable Health Monitoring Method for Photovoltaic Module Array

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ABSTRACT

Solar cell modules are connected in serial and parallel in a photovoltaic system. All the solar cell modules degrade over time and the most degraded module in a string decide the output level of the string. In this study, we suggest a health monitoring methods which enable to detect the most degraded module in a string without separating the module from string. We suggest placing a non-transparent film on a module in a string to make an artificial shading effect and monitoring the current-voltage curve of the string as placing the film to the next one. We show analytically that the most degradation module can be detected by comparing all the string current-voltage curves. We demonstrate the method for a field photovoltaic string.