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A SIMPLE METHOD FOR SHORTENING DETECTION PROCESS OF POTENTIAL INDUCED DEGRADATION OF SOLAR CELLS

Abstract:

Potential Induced Degradation (PID) is a phenomenon that makes solar cells system loses power seriously under high voltage stress between glass surface and solar cells. Prevention of PID effect for individual photovoltaic (PV) modules is very important issue nowadays. The solar cells with latent PID are hard to detect when they are being manufactured. Recently, the solar cell can be detected for latent PID after the solar cell manufacture process. Each solar cell is under 1000 volts stress and a probe is used to measure the shunt resistance of solar cell for detecting latent PID in modern industrial. But the testing procedures are time consuming. It costs 40 hours for testing each solar cell. How to reduce the time of yield is the most important problem for industrial. In this paper, an on-line data analysis algorithm is proposed to predict the solar cell with latent PID and avoid power loss of PV modules from PID phenomenon. According to the experimental results, the on-line data analysis algorithm of PID detection can efficiently increase the yield rate of solar cell, and data analysis algorithm can speed up the solar cell testing. This data analysis algorithm improves the solar cell manufacturing in the same time.

Keywords:

Potential Induced Degradation, PID, On-line Data Analysis, Solar Cells

JEL Classification: C80