Abstract
Today majority of the methods used to measure the performance of a Photo-Voltaic panel are based on conversion efficiency; they do not take into consideration factors such as temperature and internal resistance variations on which output power of Photo-voltaic (PV) panels depends thus leading to an incomplete measure of real time performance. Also most of the methods require isolating panels from the grid, which makes it a cumbersome and expensive practice. To monitor real time performance of PV panels on the field an accurate and robust technique is essential which overcomes above deficits. In this paper such a simple and novel technique is proposed to accurately predict the PV module performance based on a key measure known as Fill Factor. This technique is implemented by means of a cost effective prototype. This prototype device continuously monitors the PV panel taking into consideration the effect of varying meteorological parameters and warns the user if it is not performing as per operational standards. The device functions while the panel is connected in a power grid without the need to disconnect and requires human intervention only after a fault is detected.

References

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Index Terms

Computer Science
Applied Energy
Keywords

Pv Panels  Grid-connect  I–v Curve  Short-circuit Current  Open-circuit Voltage  Fill Factor

Maximum Power Output

Solar Panel Health

Monitoring Systems

Renewable Energy