Gaussian approach to compare crystalline solar panel performance

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Abstrak

The performance of solar panels is determined based on the Maximum Power Output and the Fill Factor (FF) under a Standard Test Condition (STC). STC is a standard test condition in which the solar panels ideally work. STC testing methods do not consider the factors that affect the performance of solar panels, such as solar radiation and temperature changes. This study discusses a method that is simple and easy to determine the performance of crystalline solar panels. This method is based on comparison of the normal cumulative probability distribution of the Fill Factor on radiation and temperature variations to STC conditions. The experiment shows that A-180 Photovoltaic (PV) has a better performance rating than B-180 PV with a probability ratio of 27.12% and 16.09, respectively. The Gaussian Method which is used also can be verified by maximum power measurement at radiation of 1000 W/m2. Results show that A-180 PV has a better power ratio with 81.55%, which is higher than B-180 PV with 78.6%.