Analysis of Temperature Effect on a Crystalline Silicon Photovoltaic Module Performance

In this paper, the effect of the cell-temperature on the performance of photovoltaic (PV) module is evaluated. The evaluation is based on a mathematical module (single diode equivalent circuit) and practically based on solar module tester (SMT). Solara® 130W PV crystalline silicon module was used in this simulation. The SMT is able to supply a constant irradiance level (1000W/m^2) or any other desired value during the test (100 -1200W/m2). The evaluation results showed that the output power of PV reduces by about 0.48W as the temperature of the module surface increases by one degree Celsius.