

COMPARATIVE STUDY ON PERFORMANCE EVALUATION OF SOLAR PHOTOVOLTAIC MODULE UNDER MANUAL TRACKING AND FIXED ORIENTATION MODE

V. M. MODI, H. N. KADEWAL, J. R. SAMARIYA & AJINKYA DESHPANDE

College of Renewable Energy & Environmental Engineering, S. D. Agricultural University,
Sardarkrushingar B. K. Gujarat, India

ABSTRACT

Solar photovoltaic module is the most significant renewable energy technology as it involves direct conversion of solar radiation into electricity. Several solar cells are connected in series/parallel configuration to make it module in order to obtain desired voltage and current. In photovoltaic effect, Photons give their energy to electrons based on the conservation of momentum and energy principals. The liberated electrons can move across the crystal. The experiment was carried out to evaluate the performance of solar module under different condition using solar photovoltaic test kit procured from IIT, Mumbai. The poly crystalline module of 10 watt was tested for two modes (i) manual tracking of module to follow the sun from east to west (ii) Fixed orientation. For both condition the angle of inclination was kept constant at Latitude $+10^{\circ}$ i.e. $34^{\circ}19'$. The result revealed that manually tracking of module recorded maximum power (10.23 W) even under moderately low solar insolation of 1107 W/m^2 as compared to module under fixed mode condition.

KEYWORDS: Current, Module, Power, Solar Radiation, Volt