

One page write up

INVESTIGATION OF DUST FORMATION ON THE SOLAR PV ARRAY AND POWER ENHANCEMENT

Renewable energy is clean, free and endless. Recently electricity generation from photovoltaic (PV) system has attracted the research attention due to its wide availability and renewability. Application of non- conventional sources especially solar PV has been regarded by most of the government across the world. The endless solar energy has a special identity towards today's energy crisis and global warming. The major problem behind the energy extraction from solar PV is its efficiency. To obtain maximum efficiency the solar PV should be operated in its maximum power point. Usually the MPP is extracted with the help of MPPT.

There are many solutions available to operate solar PV in its MPP. One such algorithm is Perturb and Observe (P&O). But the problem is during partial or uneven shading in any one of the panels due to dust, tree, birds, buildings etc., will affect the power generation from other panels also. Thus the overall energy extraction is greatly reduced. Dust formation in the real time solar power plant also leads to drop in power. The power -voltage (p-v) curve during this condition contains many peaks, so the MPP detected may not always be the Global Maximum Power Point (GMPP). This research work focuses on achieving GMPP under partial shading conditions and dust formation in various thickness levels also to be investigated.

Another one technique is Reconfiguration of electrical connections. The PV modules are rearranged in real time so as to extract maximum energy from solar PV. It is done with the help of switching circuits. This research work also focuses on improved power technique for better performance thereby, increasing the overall efficiency.