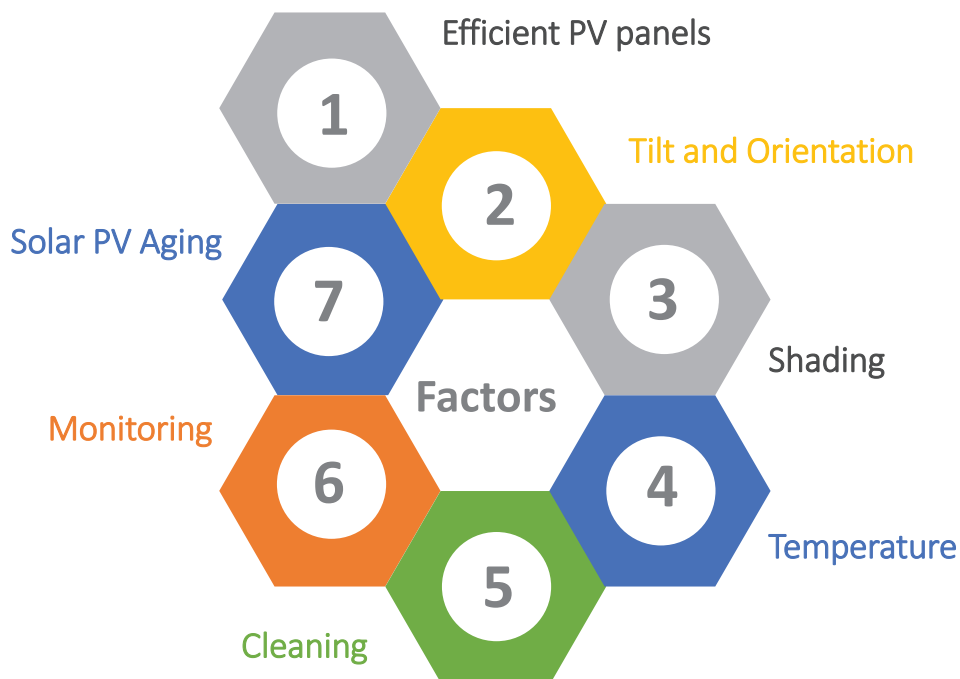




MAINTAINING AS HIGH AS POSSIBLE THE PERFORMANCE OF A SOLAR PV SYSTEM

As investment in Solar PV systems is capital intensive, return on investment is expected to be higher. However, if the PV system does not perform well, the outcome might be catastrophic financially.

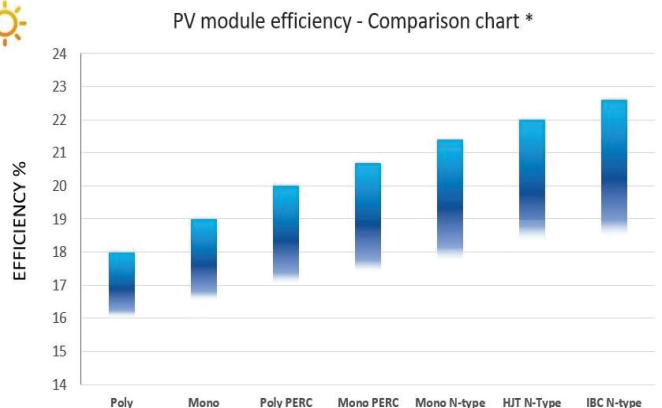
Therefore, maintaining the performance of a solar PV system as high as possible requires careful consideration of several factors.



01 Buying efficient solar PV panel models

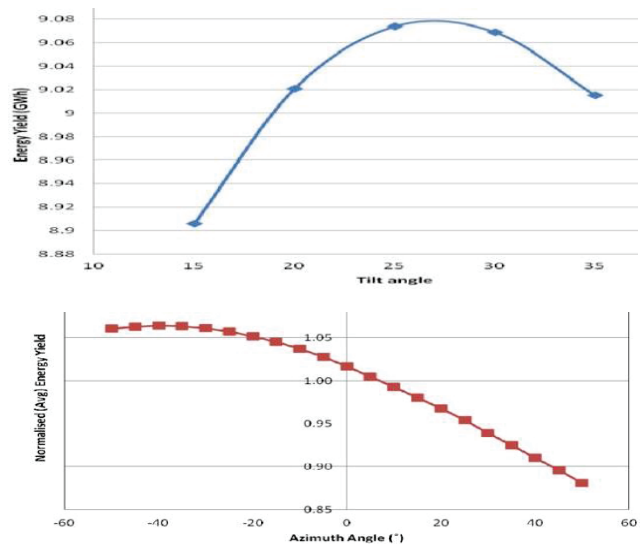
PV module efficiency can be considered as one of the most important factors for PV system performance. A panel's efficiency is determined by the percentage of energy hitting the panels that the photovoltaic cells are able to convert into electricity.

As not all solar panels are equal, each has its efficiency. They may range from 16% to 23%.



02 Tilt and Orientation

The effects of tilt and module's orientation on the performance of the PV system have been well studied. Indeed, the angles effect the amount of solar radiation exposed on the array. Optimal angles for tilt and orientation must be chosen depending on the location of the PV system.



03 Shading

It is required to avoid installing solar panels in shaded areas as it has effects on the electricity output. Because of how panels are installed internally, one shaded cell can have impact on the whole module, resulting in an inefficient PV system.

Source: P. Bhattacharya, Procedia Materials Science 2014, 6, 1942.

04 Temperature

Temperature is also a key factor in maintaining the performance of a PV system. The hotter the solar panel, the lower the power output. Tests show that for every increase of temperature after 42 degrees, a 1.1% drop in solar panel conversion is observed. Considering thermal characteristics of a solar PV panel is key for hot environments.

05 Cleaning

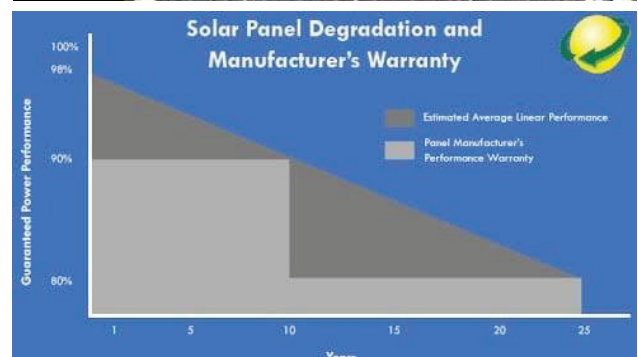
Low maintenance is required for the PV system. However, cleaning panels from dust and dirt is essential to keep an efficient PV system.

06 Monitoring

Monitoring the outputs of the PV system is of great importance as it shows any efficiency drop and can detect also potential anomalies. Energy management software can be used for that purpose

07 Monitoring

PV module efficiency degrades at a rating that is guaranteed by the manufacturers. Not less than 80% is guaranteed by year 25. Lower values may be considered based on experience.



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