

SOME ANALYTICAL QUESTIONS

1. Solar Panels produce AC or DC? How is the interconversion caused?

Ans. Solar panels produce DC. The conversion from DC to AC is caused by inverter while the reverse is caused by rectifier.

2. Why can't we use two panels instead of using a tracker?

Ans. Increases installation and maintenance cost, more space is occupied, cannot track the sun continually which may result in decreased output.

3. Why can't we use a mirror (reflector) to track the sun?

Ans. Efficiency is decreased by factors like shading, obstacles as it will not only reflect the solar radiation but also other surrounding radiations, may not send direct solar radiation.

4. Why dual-axis trackers are more efficient than single-axis trackers?

Ans. Single-axis trackers are able to track the sun along single axis, typically E-W along which the motion of the sun is constrained. However, along with time the elevation of the sun also changes due to which tracking efficiency is reduced in single-axis trackers. In dual-axis trackers the tracking occurs in E-W and N-S directions which takes into account the elevation angle thus maximizing solar input and so is the output. Apart, from these dual-axis trackers can also reduce the effect of shading.

5. Does tracking systems increases the solar conversion efficiency?

Ans. NO. While talking about efficiency, there are two types of efficiency.

- (a) Solar conversion efficiency, which is the efficiency of conversion solar radiation which is converted to electricity. This is constant

for a given panel of a given semiconducting material. It is determined experimentally or by the manufacturer.

- (b) Overall Output efficiency, which is the relative/fractional power output with and without using tracking systems.

So while talking about efficiency we mean overall output efficiency as solar conversion efficiency cannot be changed.