

ENHANCE THE EFFICIENCY OF SOLAR PV SYSTEMS WITH HI-TECH ELECTRONIC EQUIPMENT

One of the most efficient ways of generating electricity is with the help of PV cells. Photovoltaic (PV) cells are used to convert solar light photons into electricity. They perform two major functions: photo generation of charge carriers (electrons and holes) in a light-absorbing material, and separation of the charge carriers to a conductive contact that will transmit the electricity.

With the help of photovoltaic arrays electricity can be derived directly from the sun's radiation. These arrays have tremendous potential to alter the economics and environmental impact of electrical power generation. The process of electricity generation is as follows. 1. The solar radiation received by the PV array is sent through a charge controller which in turn is passed through a battery system. 2. The output from the battery is passed through a DC to AC converter and subsequently passed through circuit breaker boxes to derive AC and DC volts.

Now, since most solar arrays are composed of "strings" of matched panels, wired in series, when individual panels experience minor variations in output, they disrupt the output of the string and the entire array, cutting overall energy harvest by 5 to 30 percent. This affects the solar performance output of the whole process. Therefore, what is required here is a unique solar architecture that addresses this inherent vulnerability of the system.

Today, there are many efficient solar PV systems manufacturers who offer hi-tech electronic equipments for efficient power generation. They offer: 1. Designer services which can aid in proposing suggestions about PV panel location, orientation and overall system size. 2. They send installers who can ensure that a safe, simple wiring scheme with easy expansion and per-panel monitoring is installed. 3. And some experienced players in this field also provide system operators who help to improve the expected output and payback from the whole process.

The cost benefits of tying up with such providers are as follows - The overall wiring effort is a costly and time-consuming aspect of solar array installation. The process requires series-string arrays where each panel must be connected to adjacent panels with wiring and junction boxes, and a return line run from the end of each string. The services of power electronics providers can eliminate the need for a return line.

Using efficient modules industries can save up to five 70-watt thin-film panel, greatly reducing the number of junction and combiner boxes, as well as wiring and labor costs. The resultant effect is a faster, smarter, less expensive installation. So power starts flowing sooner, and crews can complete more installations in the same amount of time.

Source : <http://solarpowerissues.blogspot.in/2010/01/enhance-efficiency-of-solar-pv-systems.html>