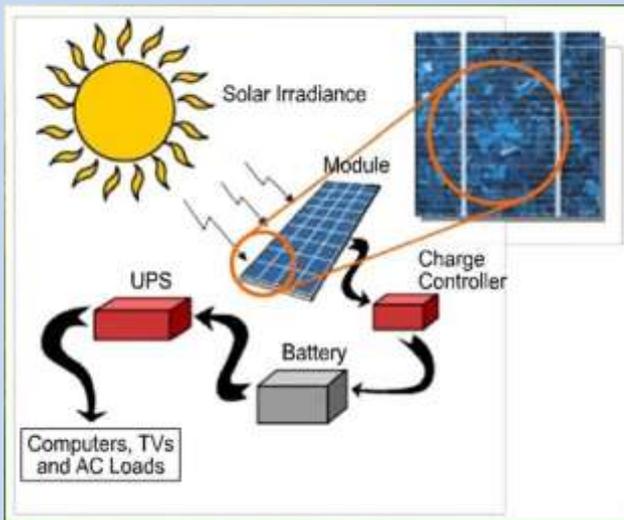


Operational details of Solar Photovoltaic system with batteries & UPS



“Pic – A”

The system opted as per the specifications is called an "off grid" or 'stand alone' system, which produces and stores power independently from the utility grid besides power input from the solar array. The electricity generated by the panels is stored in a bank of rechargeable batteries as DC but in order to power household appliances an inverter is required to convert the stored DC to AC.

Solar photovoltaic (PV) systems are like any other electrical power generating systems. In PV system, just the equipment used is different than that used for conventional electromechanical generating systems.

However, the principles of operation and interfacing with other electrical systems remain the same. Although a PV array produces power when exposed to sunlight, a number of other components are required to properly conduct, control, convert, distribute, and store the energy produced by the array. Solar PV system consists of following major components.

- **Solar Photo Voltaic Modules:** The solar radiation falling on the modules is converted in to electricity by photovoltaic principle. Each set of solar array consists of number of solar modules connected in series and parallel connection depending on capacity and operating voltage. The generated array current is used to charge the battery bank.
- **Array junction box / Charge Controller:** AJB is used to connect the solar array strings in parallel at one common place. In case of installation of a PCU / solar UPS, charge controller is provided inside the same.
- **Power conditioning unit / Inverter / UPS:** A common cubicle consisting of Inverter & solar charge controller. PCU is used to optimize the utilization of the battery capacity and to extend the service life of the battery by controlling the battery charge and discharge level. PCU also does the function of converting DC energy into AC energy to power AC loads like computer, printer & light's.
- **Battery bank:** Battery bank is used to store the electrical energy produced by the solar array during day time and uses the same when backup is required.

PS : The specification of all the systems would be different and would be provided with the firm proposal