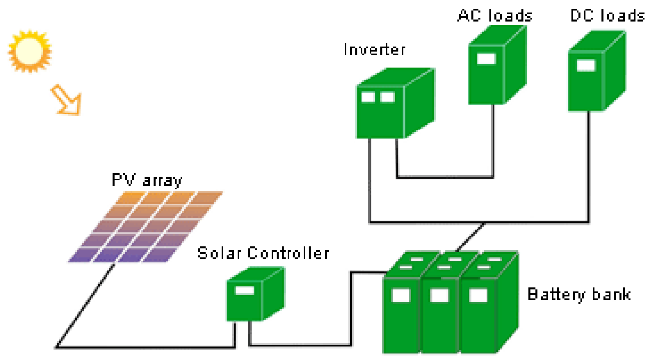
STAND ALONE PV SYSTEM

Stand-alone systems are independent from the utility grid,avoiding the possibility of losing power when the grid goes down.Electricity from stand-alone systems are used on site,such as an RV or cabin.Power that is generated can be stored in batteries and used at night or on sunless days. A generator may also be used for back-up.For PV applications,the size of a stand-alone system is usually up to 50kW.

The system diagram as follow



System includes:

1. PV Array: A number of PV panels connected in series and/or in parallel giving a DC output out of the incident irradiance. Orientation and tilt of these panels are important design parameters, as well as shading from surrounding obstructions.

2. PV controller:control battery bank charge and discharge reasonable and safety.

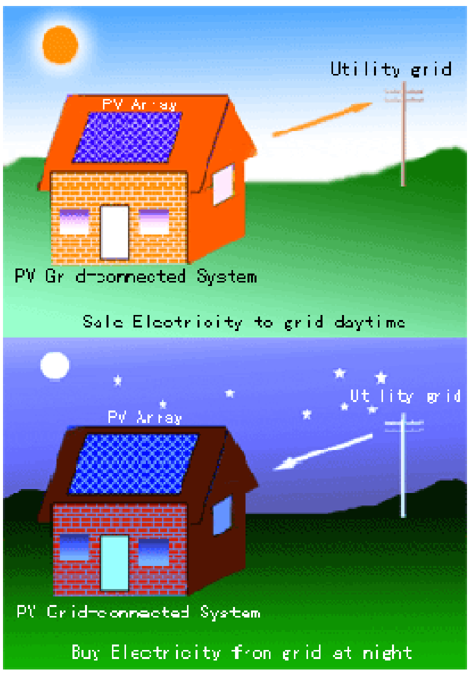
3. Inverter: A power converter that "inverts" the DC power from the panels into AC power.The characteristics of the output signal should match the voltage,frequency and power quality limits in the supply network.

4. Battery bank: can be a single battery or multiple batteries connected together to create essentially one large battery of the required voltage and amp-hour capacity.In some ways the battery configuration and capacity are the most important electrical power decision to make, and a wise choice can help guarantee a steady supply of electrical power as well as a system that is simple to operate and maintain.

5. Loads: Stands for the network connected appliances in the building that are fed from the inverter, or, alternatively, from the grid.

Grid-connected PV system

In photovoltaic solar energy systems, light is converted into electrical energy that is used immediately or stored. In a grid connected photovoltaic system, the generated direct current is transformed into an alternating current that can be used in the house immediately. In case of a??remainder of energy, it can be delivered into the grid.



Grid connected system avoid the need for electricity storage in batteries by essentially using the utility as a battery system. When your solar or wind system produces more electricity than you need, the excess is sold back to the utility.When your system doesn"t produce enough electricity,you can draw power from the grid.All this is done automatically through a net metering or net billing program.In most cases,a special or second utility meter will be added to keep track of how much electricity has been sold to the utility.??

Advantages of utility interconnection include having access to standard AC power all of the time,not just when your system produces electricity,and avoiding the cost of a battery back-up system.A disadvantage is the utility interconnection fee,which varies with each utility.The size of a utility connected project depends on how much of your electric consumption you want to displace and how much money you are able to invest.

Grid Connected PV system design has the following components:

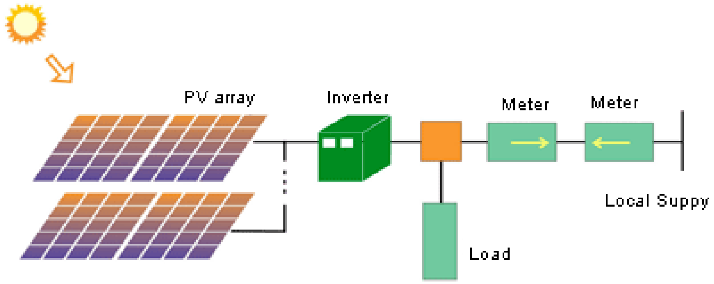


Fig.1. Single inverter Grid Connected System.

1. PV Array or Generator: A number of PV panels connected in series and/or in parallel giving a DC output out of the incident irradiance. Orientation and tilt of these panels are important design parameters, as well as shading from surrounding obstructions.

2. Inverter: A power converter that ?°inverts?± the DC power from the panels into AC power. The characteristics of the output signal should match the voltage, frequency and power quality limits in the supply network.

3. Loads: Stands for the network connected appliances in the building that are fed from the inverter, or, alternatively, from the grid.

4. Meters: They account for the energy being drawn from or fed into then local supply network.

5. Local Supply Network: A single or three-phase network managed by a Public Electricity Supplier. The supply network acts both as a sink for energy surplus in the building or as a backup for low local generation periods.