

House Working on Solar Energy

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Introduction :

Energy materials such as oil and natural gas are scarce in Palestine. It depends entirely on the adoption of energy from neighboring countries. There is no Palestinian control of any generating stations of electric power except only on station in Gaza. In the last ten years, there is a significant increase in the demand of electric power. Where, Unfortunately, the cost of traditional power increases rapidly. One solution is to depend on the sun energy , which is clean and cheap power for long term period . In Palestine, more than 250 days of 365 days of the year are almost full shining days, which make it very significant to invest in this kind of Energy.

Project Objectives:

- This projects aims to
- ✓Provide awareness and knowledge about renewable energy sources .
- ✓Help people in need of energy in remote areas.
- ✓Provide useful energy solutions for present and the future.
- ✓Adoption of the State itself (solar system model) to produce electrical energy.
- ✓Present solutions and power alternatives for rural communities in Palestine.

Results:

- ✓Reducing the dependence of non-renewable energy.
- ✓Taking the advantages of renewable energy in all of its forms .
- ✓Saving money, time and effort.
- ✓Reducing the dependence of power purchased from neighboring countries.

Proposed project :

Modern house depends on solar energy in generating it's needs of electrical power. It is a scale model of the ideal home Which works on solar energy, I have chosen this project because we need in our lives the process of energy, especially at this time because the fuel and oil resources decline rapidly almost to end, and there cost increases by time.



Figure 1:General Idea

Project Block Diagram:

This diagram below shows the process of converting solar energy into electrical energy as DC voltage stored in batteries and then converted into AC supply to feed the electrical loads at home. The stored energy is used to feed the home during the periods of sun light absence (in the night or cloudy day) .

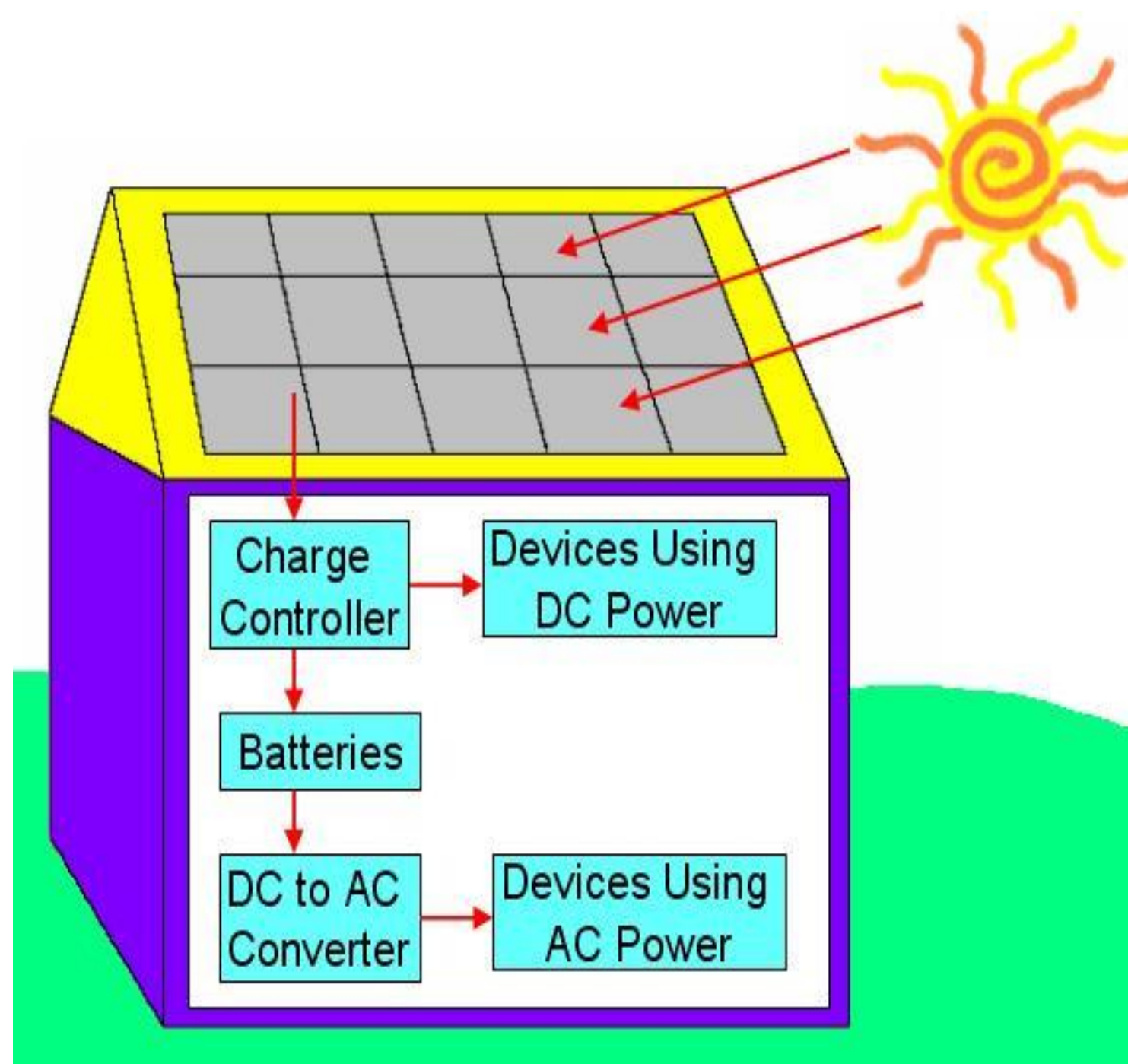


Figure 2 : System General Block Diagram.

System Design and Implementation:

The system contains basically from 2 photovoltaic cells , each with dimensions 40cm *100cm. The produced voltage is 19 volts, it is regulated by designed voltage regulator to fix the DC voltage on 24 volts in order to charge 24 V batteries that feed the actual model loads.

A single phase inverter is designed to convert produced power to AC power (220 V) in order to supply home electrical loads .

The net produced power of the system is 0.5KW .

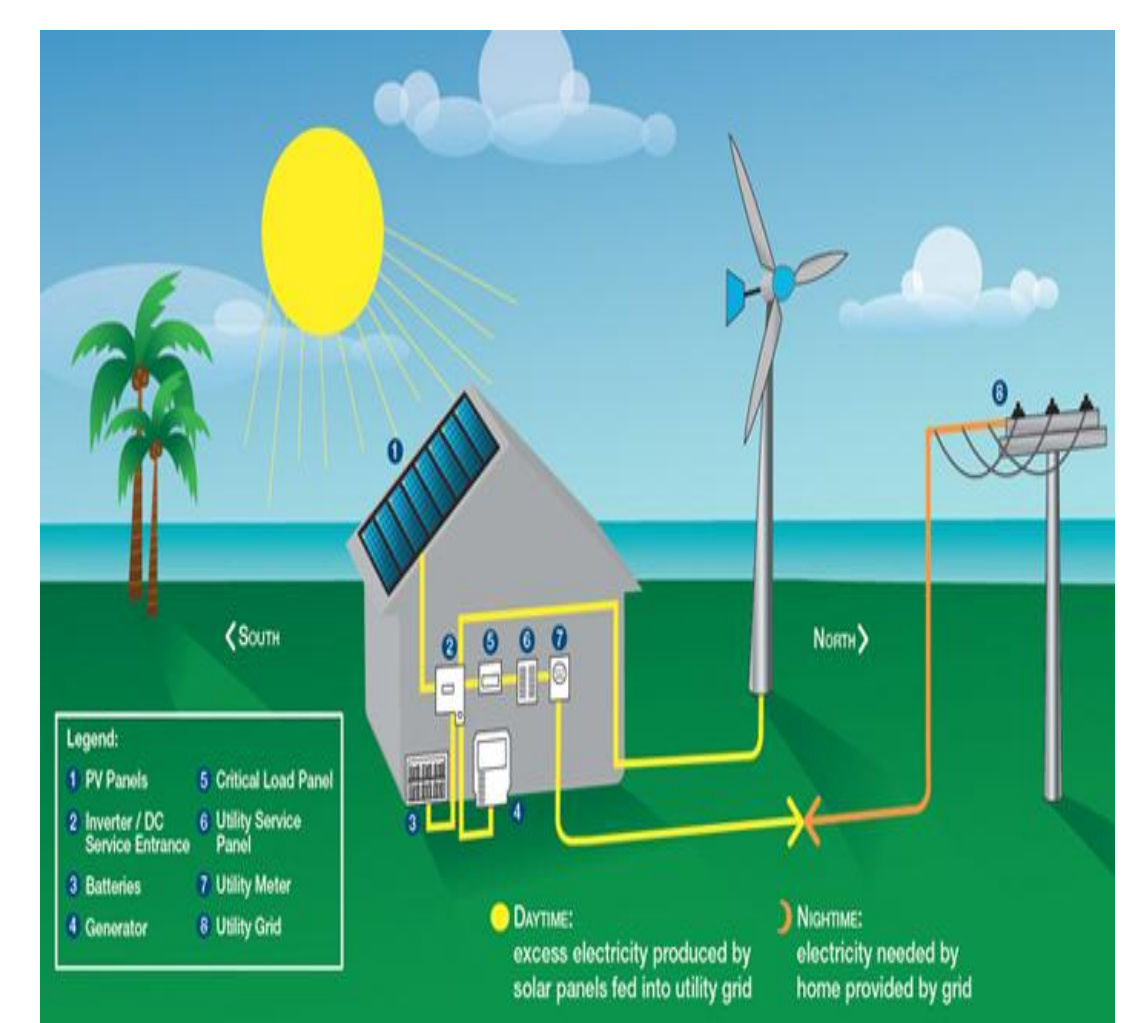
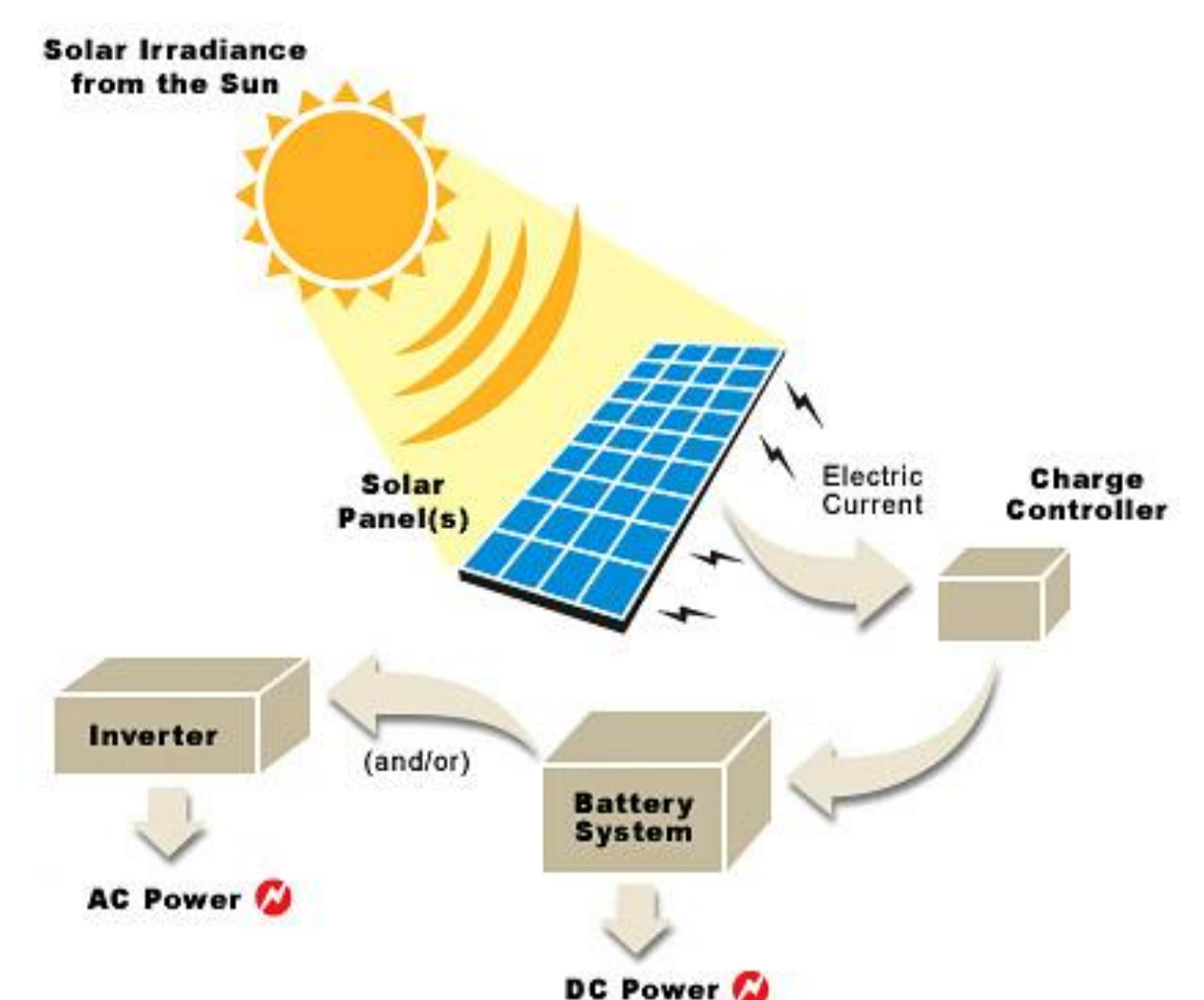


Figure 4: System Design Options

Figure 4 shows that it is recommended to integrate the solar energy supply and the normal electricity supply taken from the electricity company, where the house loads can depend on the normal supply in the times of limited solar energy generated. Wind energy is a suggested supply also.