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A CONCEPTUAL PAPER ON UTILIZATION OF SOLAR ENERGY FOR ELECTRICITY

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Abstract: The Solar Energy is formed by the Sunlight is a non-vanishing renewable source of energy which is free from environmental. Every hour sufficient sunlight energy reaches the earth to assemble the world's energy require for a whole year. In today's generation we required Electricity every hour. This Solar Energy is generated by as per applications like industrial, commercial, and residential. It cans effortlessly energy strained from direct sunlight. So it is very competence & free environment pollution for adjoining. In this paper, we have reviewed about the Solar Energy from Sunlight and discussed about their outlook trends and aspects. The article also tries to discussed working, solar panel types; highlight the various applications and methods to endorse the benefits of solar energy.

Keywords: Renewable energy, Solar panel, Photovoltaic cell, Solar Concrete Collector

1. INTRODUCTION

Nowadays, due to the decreasing amount of renewable energy resources, the last ten years become more significant for per watt cost of solar energy device. It is absolutely set to befall efficient in the upcoming years and mounting as enhanced technology in terms of both cost and applications. Everyday earth accepts sunlight above (1366W approx.) This is an unlimited basis of energy which is obtainable at no cost. The major advantage of solar energy over other conservative power generators is that the sunlight can be directly transformed into solar energy with the use of smallest photovoltaic (PV) solar cells. There have been a large amount of research activities to unite the Sun's energy procedure by increasing solar cells/panels/module with high converting form. The most advantages of solar energy is that it is at no cost accessible to common people and accessible in large quantities of contribute compared to that of the price of different fossil fuels and oils in the past ten years. Moreover, solar energy necessitates significantly lower manpower operating cost over conservative energy manufacture technology.

2. SOLAR POWER ENERGY

Amount of energy in the appearance of heat and radiations called solar energy. Shown in Fig.1 It is glowing light and heat from sun that is natural cause of energy using a variety of ever altering and mounting of technology such as solar thermal energy, solar architecture, solar heating, molten salt power plant and artificial photosynthesis. The huge enormity of solar power obtainable makes extremely tempting source of electricity. 30% (approx.) solar radiation is back to space while the rest is engrossed by ocean, clouds and land masses.

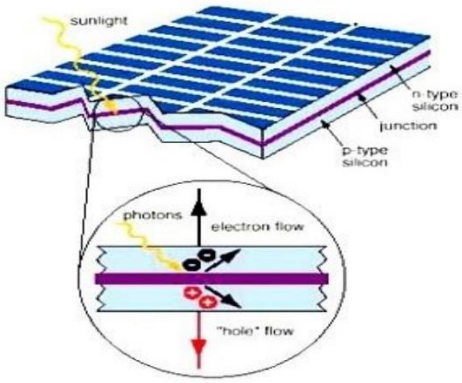
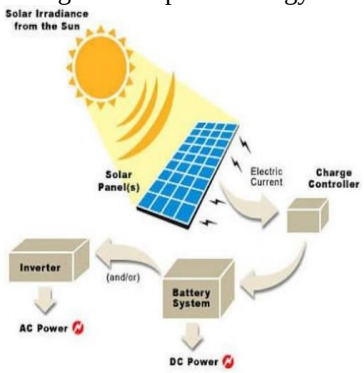


Figure 1 Inner of response of Solar Power Energy

2.1 FUNCTIONING OF SOLAR POWER ENERGY

PV cells Convert Sunlight to Direct Current (DC) electricity. Charge Controller work as control the power from solar panel which reverses back to solar panel get reason of panel harm. Battery System perform as storage of electric power is used when sunlight not obtainable (i.e. night). From this system associated to inverter for exchange Direct Current (DC) into Alternating Current (AC).

Figure 2 Functioning of solar power energy



3. MODELING OF PV SECTION

Solar Cell (Photovoltaic Cell)

The cells transformed solar radiation in a straight line into electricity. It consist different kinds of semiconductor resources. It has two types: positive charge and negative charge shown on fig.1.This cell technology are used to intend solar cells with short cost as well as high adaptation efficiency. When the cell engrossed photons from sunlight, electrons are knocked free from silicon atoms and are strained off by a grid of metal conductors, pressure a stream of electric direct current. Solar cell PV made up of many chemicals.

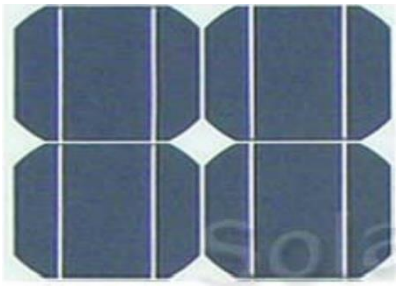


Figure 3 Photovoltaic Cell

Photovoltaic Component

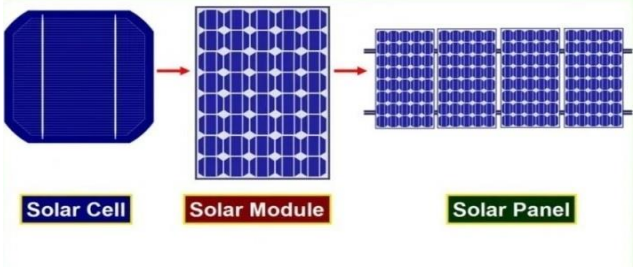
A PV component consists of solar cell circuits preserved in an environmentally defensive protect and are the fundament construction blocks of PV system. Usually sizes from 60W to 170W. Usually a number of PV component are approved in sequence and equivalent to congregate the energy obligation.

Figure 4 Photovoltaic Component

Photovoltaic Section

It comprises one or more PV components assembled as a pre-wind, field instable unit. In this panel PV cell is series connections. Solar panels are made up of individual PV cells associated mutually.

Figure 5 Photovoltaic Section



Photovoltaic Selection

It is enclose of numerous quantity of PV cells in sequence and parallel connections. Series connections are dependable for mounting the current of the component whereas the parallel association is dependable for mounting the modern in the collection. It produces utmost 180W in full sunshine. Large the total surface area of the area of the array, more solar electricity it will manufacture

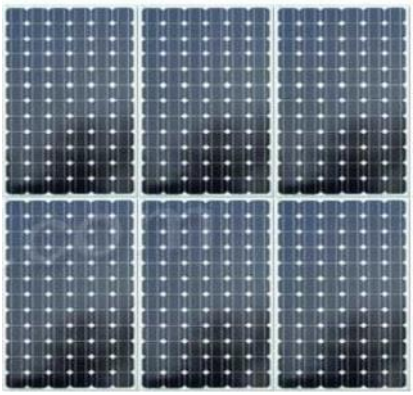


Figure 6 Photovoltaic Collection

4. SOLAR POWER CONCRETE ANTENNA

Parabolic Trough Reflectors

It surround of linear parabolic reflector deliberate light onto a headset positioned along the reflector's focal line. It consists of recipient is a tube situated openly above the middle of the parabolic mirror and liquid with a working fluid. A working fluid is heated 150-350 ^{0}Cas it flows though the recipient is then used as heat source for a power generation system.

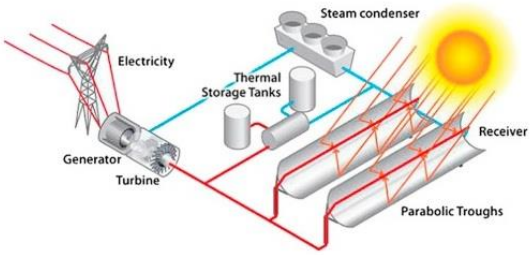


Figure 7 Parabolic Trough Reflectors

Fresnel

In a Fresnel lens, the refraction happens to manufacture in the surface, while the huge substance among the two surfaces doesn't have any problems in the refraction. It will use elevate more temperature than predictable one and also used in furnace heating. It equipment has been used for surface modifications of metallic equipment. This equipment is applying solar energy in the field of high and very high temperatures. These temperatures are achieved in a few seconds. Fresnel concentrator performed 34.3% reduction in thoughtful area compared to a parabolic of the same diameter, the 20 minutes series of action presentation desirable for manual modification in order to pathway the sun proved to be a major disadvantage with this device.

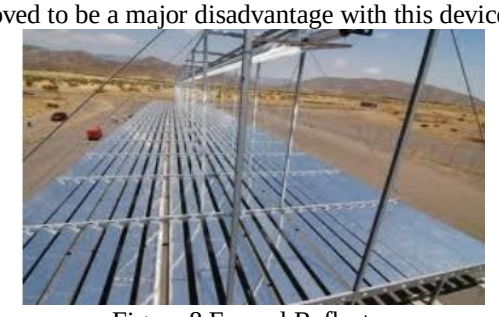


Figure 8 Fresnel Reflector

Parabolic Dish

It comparable in emergence to a large satellite dishes, but has mirror like reflectors and absorber the central point. It used a double axial sun tracking. It is competence of 30% achieved. By this dish it manufacture in MW stage in solar plant. This is uppermost alteration presentation of the concentrating solar power technology.

Figure 9 Parabolic Plate

Central Recipient

It frequently used in large extent plants that are frequently assembly the more quantity power. It also called as "Power Tower". It operates by focusing countryside of thousands of mirrors on to a recipient situated at the top of a centrally positioned Tower. The recipient collects the sun's heat relocate solution, which is used to produce stream turbine positioned at the foot of the tower for manufacture of Electricity.

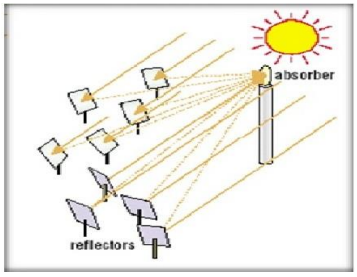


Figure 10 Essential Recipient

QUALITIES OF SOLAR POWER ENERGY

It is save up to 20% of energy costs. It can use in Remote Locations. Easy Installation (i.e. does not essential any wires, cords etc.). Rooftop which means no new space is desired & every domestic or commercials user can produce their own electricity. It is extensively obtainable of sunlight with free of cost, eco-friendly, renewable resource. It has no touching parts and not necessary any supplementary fuel, other than sunlight, to manufacture power. No necessitate of water and fuel.

DEMITS OF SOLAR POWER ENERGY

No production of energy, when the sun is not shining. Initial cost is high. More area desirable for large amount power. For alternating Current (AC) application mandatory of inverter and also storage at night. Production PV systems single silicon crystals is theoretically demanding, energy, time overwhelming.

UTILIZATIONS OF SOLAR POWER ENERGY

It is used in much relevance counting electricity, evaporation, heating water, Heating and cooling of buildings, cooking of food, water pumping etc.

Figure 11 Figure 12 Fig.13

Figure 11 Submission for heating water
Figure 12 Submission for Water pumping
Fig.13.Submission for cooking food

5. CONCLUSION

Most of the people are conscious about non-renewable energy resources. Solar energy has become enlarge trendier due to their financial reimbursement. By on Battery Backup, Solar Energy can even offer Electricity 24x7, even on cloudy days and at night. This also used with inter-grid System with Continuously Power supply. It has more advantage compared to other forms of energy like fossils fuels and petroleum drop. It is a substitute which is assure and reliable to meet the high energy command. Research on solar cell and solar energy is assured has a prospect worldwide.

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