

GOVERNMENT DEGREE COLLEGE, TANDUR

DEPARTMENT OF PHYSICS

STUDENT STUDY PROJECT (JIGNASA 2020-21)



RENEWABLE ENERGY: SOLAR

Name of the Students:

- | | |
|----------------|----------------------|
| 1. MD. WAZEED | B.Sc (MPC) III year |
| 2. J.SABITHA | B.Sc (MPCs) III year |
| 3. HARIKRISHNA | B.Sc (MPCs) II year |
| 4. C. SRIKANTH | B.Sc (MPC) II year |
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Guided by:

Sri. CH. KISHAN

Lecturer in Physics

Solar Energy

(Future Energy)

Objective: Objective of this project is to study the Production of Renewable Energy like Solar Energy and to Demonstration.

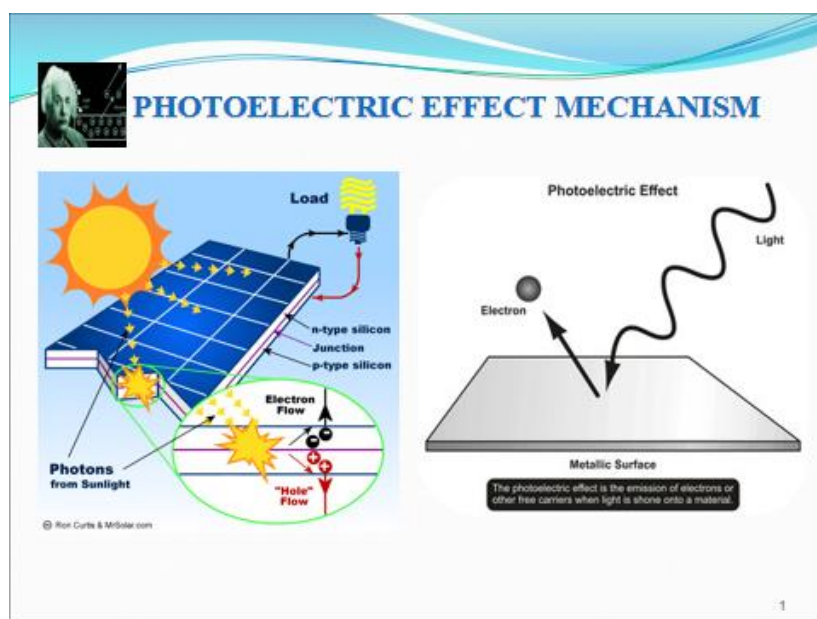
Introduction :

Solar Energy : Solar energy is radiant light and heat from the Sun that is harnessed using a range of technologies such as solar power to generate electricity, It is an essential source of renewable energy.

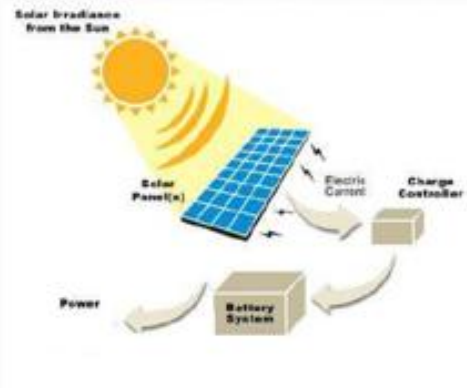
Principle :

In 1905, Einstein proposed a theory of the photoelectric effect using a concept first put forward by Max Planck that light consists of tiny packets of energy known as photons or light quanta. Each packet carries energy that is proportional to the frequency of the corresponding electromagnetic wave.

They work on the principle of **the photoelectric effect**. When certain materials are exposed to light, they absorb photons and release free electrons. ... Based on the principle of photoelectric effect, solar cells or photovoltaic cells are made. They convert sunlight into direct current (DC) electricity.



SOLAR ENERGY - BLOCK DIAGRAM



1



Importance of Project:

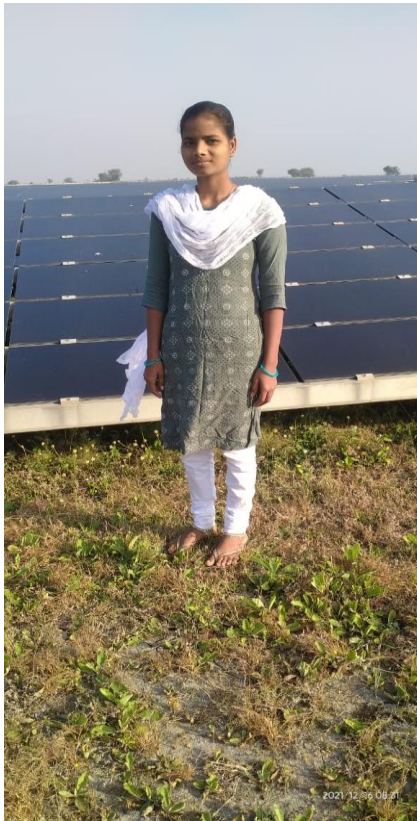
1. In day to day life the utilization of power turns to be necessary for each work.
2. Energy crisis is due to two reasons, firstly the high population of the world has been increased rapidly and the secondly standard of living of human being has increased.
3. The project proposes a novel technique for the creation of power using SOLAR.
4. The power produced by this technique can be utilized for Home, Farm Fields and Street Lights.
5. In general the power to be produced in our country by using Non renewable and renewable energy sources.
6. Non renewable energy sources like coal, nuclear, oil and natural gas. And they are available in the earth in limited quantity and they will vanish 50-60 years from now.
7. Non renewable sources are not environmental friendly and can have serious effect on our health.
8. Renewable energy is energy which is generated from natural sources, they are sun, wind, rain, and they can be generated again and again as and when we required.
9. Renewable energy sources have low carbon emissions, therefore they are green and environment friendly.
10. The power generation in this project will not affect the surroundings and it does not depend up on the climate conditions.
11. This generated power is used for various applications required by different users.

Visited the Project:



- Plant total number of PV module :- 1,21,140
- Total table's :- 673
- Total SCB's :- 80
- Module Name :- first solar ti , series 3
- PV Module Insidecard Name :- cdte cadmium





● String details :-

- Total number of strings :- 1346
- Mc4 connector make :- elmax
- SCB capacity :- 1000 volt, 400Amps
- String positive side fuse: 20Amp's
- 1 string : 100watt :-
- 1 string 90 modules,100watts
- 15modules series, 6parallel
- Series lo current same, voltage add,
- Parallel lo voltage same, current add
- 1 parallel harness current $2.14 \times 6 = 12.84$ Amps
- 1 string 9kw ($100\text{watt} \times 90\text{modules} = 9\text{kw}$)
- SCB capacity total strings $\times 9$
- 16 strings $\times 9\text{kw} = 144\text{kw}$
- 18 strings $\times 9\text{kw} = 162\text{kw}$
- String cable size : 6sqmm
- SCB out put cable size : 300sqmm single core
- 1 string : 97.5 watt
- 1 parallel harness current $2.11 \times 6 = 12.66$ Amps
- 1 string 8.7kw ($97.5\text{watt} \times 90\text{modules} = 8.7\text{kw}$)
- Inverter definition :- “ The device used to convert DC into AC”
- Inverter make : ABB,PVS800
- Inverter AC side fuse rating :- 20 Amps, 690 volt
- One inverter capacity :- 1Mw, 33/380 volt

Conclusion :

The Processing ,Production of Solar Energy and Solar Energy is
Future Energy Study by this Project.