A SEMINAR REPORT ON

"SOLAR PANEL"

Submitted to

JAWAHARLAL NEHRU TECHNOLOGY UNIVERSITY, HYDERABAD

In partial fulfillment of the Requirement for the award of the degree of

BACHELOR OF TECHNOLOGY

In

MECHANICAL ENGINEERING

BY

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Koheda road, Ibrahimpatnam, Ranga reddy-501510, T.S

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CERTIFICATE

This is to certify that the Seminar report entitled **"SOLAR PANEL"** submitted by **DODDI SRINIVAS RAO**, bearing H. T No: **195U5A0309**, in partial fulfillment for the degree of Bachelor of Technology in **MECHANICAL ENGINEERING** to Jawaharlal Nehru Technological University is a report of bonafide work carried out by him under my guidance and supervision.

Head of the department

Dr.A.V.HARI BABU, M Tech,PhD.,

Professor of ME

EXTERNAL EXAMINER

DECLARATION

I hereby declare that the seminar submitted **"SOLAR PANEL"** in partial fulfillment for the degree of Bachelor of Technology in Mechanical Engineering to Jawaharlal Nehru Technological University is an authentic work and has not been submitted to any other university/institute for the award of any degree.

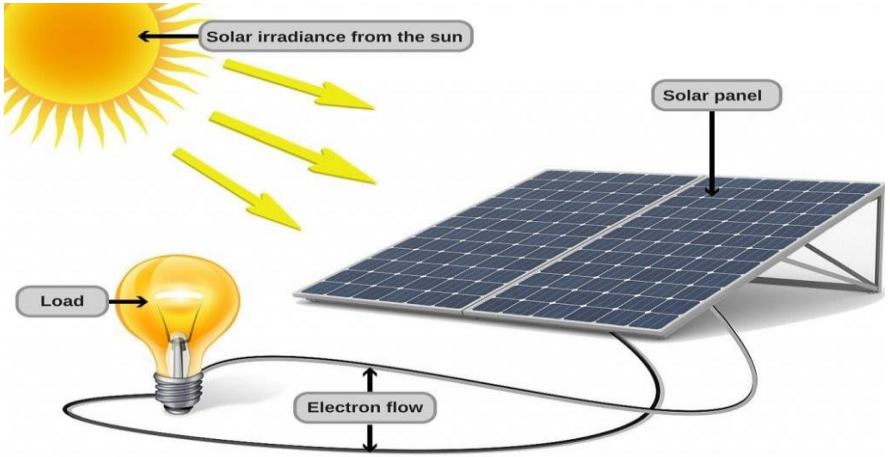
DODDI SRINIVAS RAO **195U5A0309**

AVN Institute of Engineering And Technology

SEMINAR PRESENTATION

A TECHNICAL SEMINAR ON .....

"SOLAR PANEL"



PRESENTED BY .....

DODDI SRINIVAS RAO (195U5A0309)

4 YEAR B-TECH MECHANICAL

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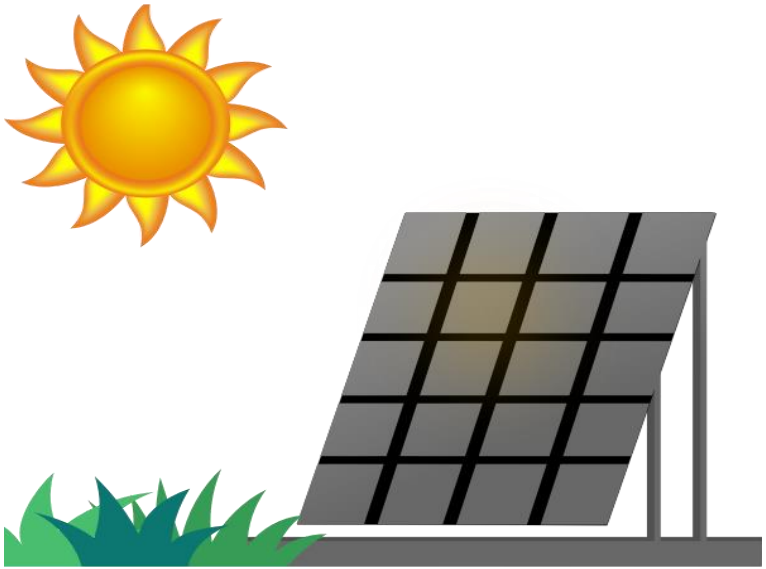
ABSTRACT

Solar energy is important for whole world due to increasing energy needs. Rapid depletion of fossil fuels provide us this greater energy source. Also, air and water pollution and global warming happens due to use of fossil fuels which known as major energy sources. For this reason, countries began to give importance to renewable energy sources like solar energy.

WHAT IS SOLAR PANEL ?



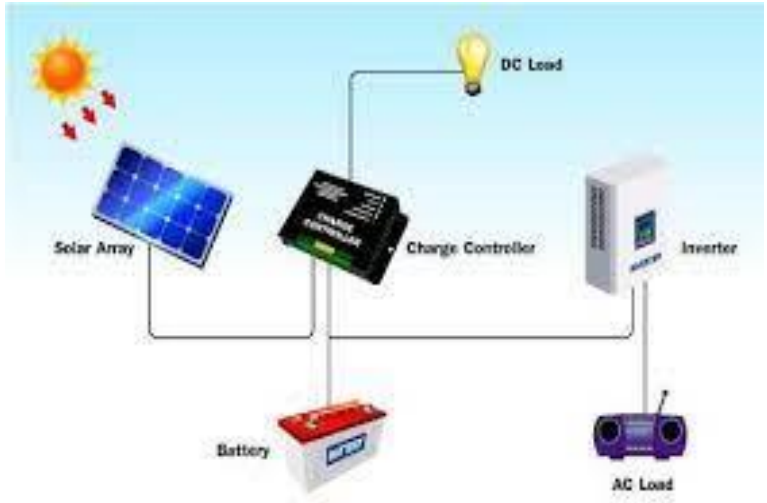
- A **SOLAR PANEL** is an assembly of photo-voltic cells mounted in a framework for installation. Solar panels use sunlight as a source of energy to generate direct current electricity
- A collection of PV modules is called a PV panel, and a system of PV panels is called an array. Arrays of a photovoltaic system supply solar electricity to electrical

HOW DOES SOLAR PANEL WORKS ?

- Photovoltaic cells absorb the sun’s energy and convert it to DC electricity Photovoltaic cells are treated with phosphorus and boron, giving them positive and negative charges conducive to carrying an electric current.
- The solar inverter converts DC electricity from your solar modules to AC electricity, which is used by most home appliances DC electricity becomes AC output when an inverter switches the direction of the current rapidly enough that it becomes AC power.
- Electricity flows through your home, powering electronic devices Solar inverters transfer converted AC energy to your home’s electric box. From there, electricity is dispersed through your house by wires in the wall so that when your devices need to be plugged in, there is an electric current available.

PARTS OF SOLAR PANEL SYSTEM

- Solar pv module .
- Inverter and charge controller .
- Batteries .
- Module mounting structure .
- Cables and connectors .



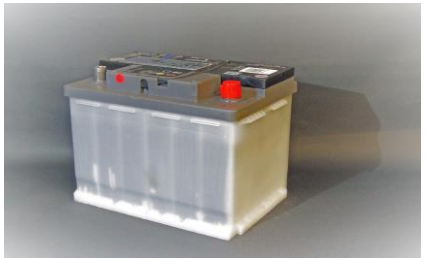
DESCRIPTION OF PARTS

➔ Solar pv module:

- several solar cells are grouped together to make a solar module.
- Solar modules are available from 0.5wp to 36.5wp.
- Solar cells are connected in series solar modules .

➔ Inverter

- Used for conversion of D.C generated from P.V module supply.
- Rating in KW
- Inverter is the brain of solar system .



➔ Charge controller:

- To charge batteries.
- To regulate voltage and current.
- Protection circuit .

➔ Batteries :

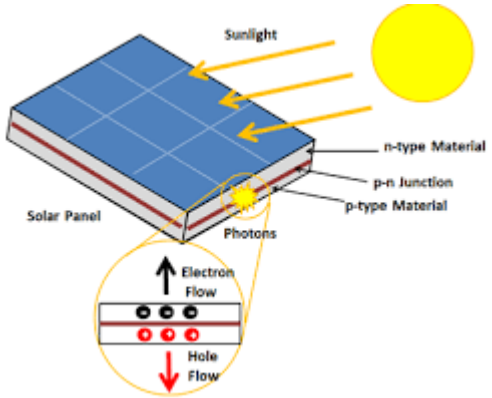
- It is a storing device i.e electrical energy
- It is a mixture of chemical compound.
- Available in watts range .

Module mounting structure:

- Used to fix solar panels on surfaces .
- Like roofs, buildings facades, or on the ground .
- Provides base to solar panels.

STANDARD SPECIFICATIONS OF SOLAR CELL

- Thickness : 180 micrometer
- Area : 156mm X 156mm (6 inch X 6 inch)
- Typical current : 8 Amps .
- Typical voltage : 0.5 volts .
- Typical power : 4 watts .
- Top surface : negative terminal .
- Bottom surface : positive terminal .



ADVANTAGES OF SOLAR PANEL

- Reduce the cost of your energy bill.
- Renewable energy source. .
- Increase your property value.
- Environmentally friendly.
- Wide range of solar products.
- Low maintenance costs.
- Homeowners can become energy independent.
- Excess solar can be sold to the grid.

LIMITATIONS OF SOLAR PANEL

- It's Not 100% Reliable. This means that when the sun is not shining, there is no generation of energy.
- High Initial Capital Costs.
- Problem of Efficiency.
- Complications When Moving.
- Materials Used to Make Solar Panels Can Cause Pollution.
- Negative Energy Balance.
- Installation Area More

CONCLUSION

Most of the Earth's surface receives sufficient solar energy to permit low-grade heating of water and buildings, although there are large variations with latitude and season. At low latitudes, simple mirror devices can concentrate solar energy sufficiently for cooking and even for driving steam turbines.

The energy of light shifts electrons in some semiconducting materials. This photovoltaic effect is capable of large-scale electricity generation.

Direct use of solar energy is the only renewable means capable of ultimately supplanting current global energy supply from non-renewable sources, but at the expense of a land area of at least half a million km^2.