

# Renewable Energy Sources

**Mr. Chennapragada Amarendra,**  
**Assistant Professor Department of EEE,**  
**Aditya Engineering College,**  
**Surampalem.**

**Course:** Renewable Energy Sources  
**Topic:** Solar PV systems  
**Semester:** V  
**Academic Year:** 2021-22  
**Teaching Methodology:** Real time case studies

**About the Course:** This course is specially designed for V Semester students. This will give the students to examine the solar photo voltaic systems. They will get to know about the construction of solar cells. They will eventually gain in finding the maximum power point techniques.



**Fig.1 Explaining the construction of Solar PV cells**



**Fig.2 Demonstration of MPPT Techniques**



**Fig.3 Demonstration of Solar PV modules**

**Innovative Teaching Methodology: Real time case studies**

Students were encouraged with case studies. Teaching with case studies develops their skills in Problem solving. Analytical tools, quantitative and/or qualitative, depending on the case.

**About the Topic:** Network Synthesis

A photovoltaic system, also PV system or solar power system, is an electric power system designed to supply usable solar power by means of photovoltaics. It consists of an arrangement of several components, including solar panels to absorb and convert sunlight into electricity, a solar inverter to convert the output from direct to alternating current, as well as mounting, cabling, and other electrical accessories to set up a working system. It may also use a solar tracking system to improve the system's overall performance and include an integrated battery.

PV systems convert light directly into electricity, and are not to be confused with other solar technologies, such as concentrated solar power or solar thermal, used for heating and cooling. A solar array only encompasses the ensemble of solar panels, the visible part of the PV system, and does not include all the other hardware, often summarized as balance of system (BOS). PV systems range from small, rooftop-mounted or building-integrated systems with capacities from a few to several tens of kilowatts, to large utility-scale power stations of hundreds of megawatts. Nowadays, most PV systems are grid-connected, while off-grid or stand-alone systems account for a small portion of the market.

**Course Outcomes:**

Student will be able to:

- Identify the components of a solar cell.
- Understand the phenomenon of maximum power point techniques.