

Electric Power Generation and Distribution Systems

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Subject: Electric Power Generation and Distribution Systems

Topic: Power Stations

Semester: IV

Academic Year: 2021-22

Teaching Methodology: Project based learning

About the Course: This course is specially designed for IV Semester students. This will give the students to familiarize the different components of thermal power plant & hydro power plant. They will get to know about the about the various components of power stations. They will eventually gain an understanding about the concept of power stations.



Fig.1 Dr. Veeranki Srinivasa Rao explaining the doubts of the students



Fig.2 Encouraging the students in learning and sharing their knowledge on power stations



Fig.3 Delivering the concepts on solar PV generation

Innovative Teaching Methodology: Project based learning

Project based learning is a strategy where students were encouraged to do the real-world and personally meaningful projects. Project-based learning always promotes collaboration because these assignments are often too large and complicated for a single student to accomplish independently.

About the Topic: Power Stations

A power station, also referred to as a power plant and sometimes generating station or generating plant, is an industrial facility for the generation of electric power. Power stations are generally connected to an electrical grid.

Many power stations contain one or more generators, a rotating machine that converts mechanical power into three-phase electric power. The relative motion between a magnetic field and a conductor creates an electric current.

The energy source harnessed to turn the generator varies widely. Most power stations in the world burn fossil fuels such as coal, oil, and natural gas to generate electricity. Low-carbon power sources include nuclear power, and use of renewables such as solar, wind, geothermal, and hydroelectric.

The electrical power is generated in the range of 11kV to 25kV, which is step-up for long distance transmission. The power plant of the generating substation is mainly classified into three types, i.e., thermal power plant, hydropower plant and nuclear power plant.

The process of site selection for thermal power plant and its layout are discussed. Components such as Boilers, Superheaters, Economizers, Electrostatic precipitators, Steam turbine, Condensers, Feed water circuit, cooling towers and Chimney are demonstrated thoroughly.

Course Outcomes:

Student will be able to

- To explain the principle of power generation.
- To identify the various components of power generation units.