



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

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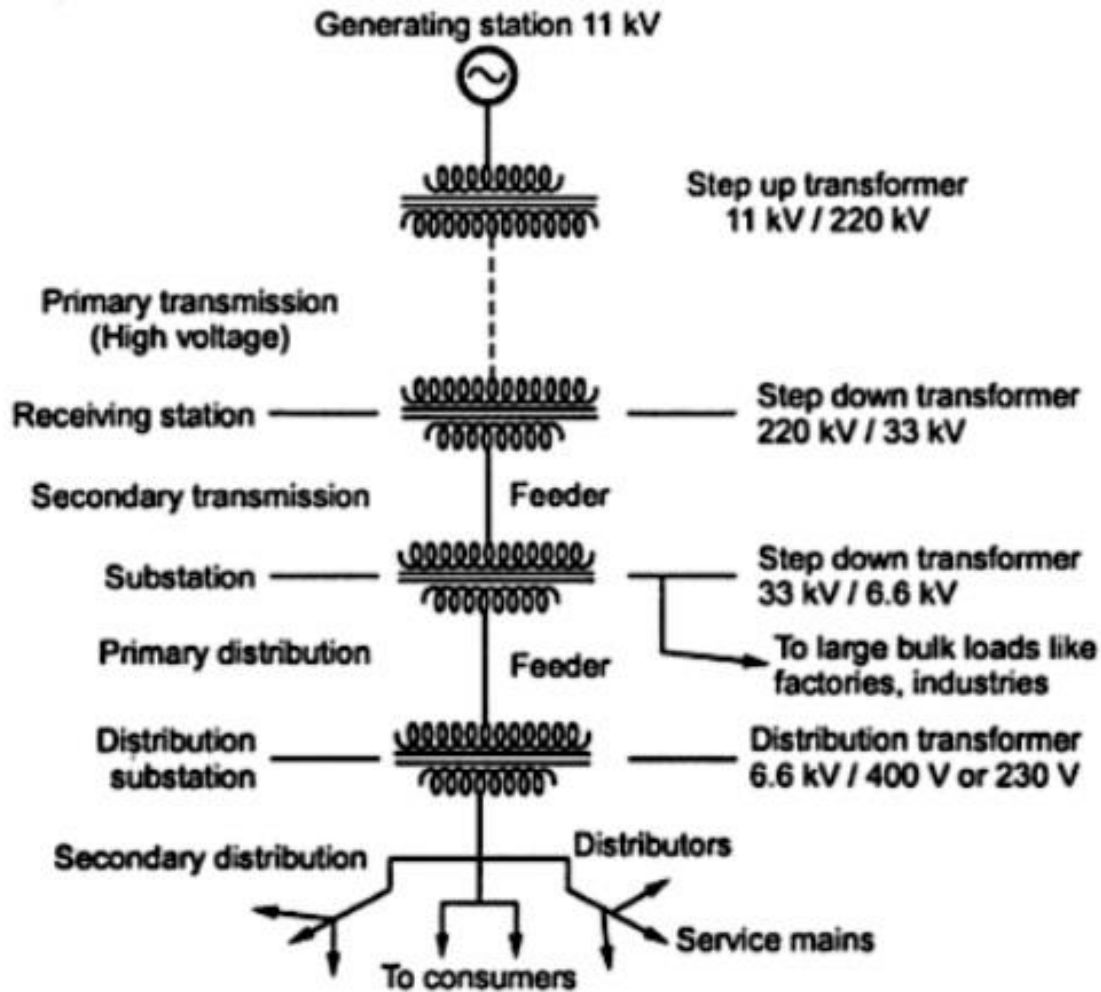


19EEB302/ POWER SYSTEMS – II

III YEAR / VI SEMESTER

UNIT-I: POWER FLOW ANALYSIS

POWER SYSTEM COMPONENTS





Power System

Definition:

- The power system is a network which consists generation, distribution and transmission system. It uses the form of energy (like coal and diesel) and converts it into electrical energy. The power system includes the devices connected to the system like the synchronous generator, motor, transformer, circuit breaker, conductor, etc.
- The power plant, transformer, transmission line, substations, distribution line, and distribution transformer are the six main components of the power system. The power plant generates the power which is step-up or step-down through the transformer for transmission.



Generating Substation

In generating station the fuel (coal, water, nuclear energy, etc.) is converted into electrical energy. 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.



Transmission Substation

The transmission substation carries the overhead lines which transfer the generated electrical energy from generation to the distribution substations. It only supplies the large bulk of power to bulk power substations or very big consumers.

The transmission lines mainly perform the two functions

- 1.It transports the energy from generating stations to bulk receiving stations.
- 2.It interconnects the two or more generating stations.The neighbouring substations are also interconnected through the transmission lines.



Sub-transmission Substation

The portion of the transmission system that connects the high voltage substations through the step-down transformer to the distribution substations is called the sub-transmission system.

The sub-transmission voltage level ranges from 90 to 138KV. The sub-transmission system directly serves some large industries. The capacitor and reactor are located in the substations for maintaining the transmission line voltage.



RECAP....



...THANK YOU