

Electrical Distribution Systems

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Course: Electrical Distribution Systems
Topic: Load modeling
Semester: VI
Academic Year: 2021-22
Teaching Methodology: Practical Demonstration

About the Course: This course is specially designed for VI Semester students. This will give the students to identify various factors of distribution system. They will get to know about the concepts of load modeling. They will eventually gain in finding the load modelling characteristics.



Fig. 1 Practical Demonstration of transmission line loading at substation



Fig. 2 Practical Demonstration at substation

Innovative Teaching Methodology: Practical Demonstration

After explaining the concepts to the students, teacher perform implementation of activities in the class room to connect theories to actual practice. With this, the students are unable to understand the theories and its applications.

About the Topic: Load modeling

Load modeling is a process of estimating a power consumption of a typical infrastructure, it can be of commercial, agricultural, industrial or residential infrastructure. Whereas, identification means the process of developing a mathematical relation between different parameters of interest of a dynamic system obtained by either observation, prior knowledge or both. The representation can be in form of mathematical equations or graphical relationships. Load modeling and identification is an important aspect in area of stability analysis, planning, monitoring, control and protection of power system. Accurate load model is required in design and adjustment of transmission and distribution networks, design for protective devices such as circuit breakers, relays and also for the control, monitoring and

analysis of the system. Electric loads are dynamic and extremely nonlinear in nature, they are therefore difficult to be optimally model.

Load models are classified into two main categories: static and dynamic models. Static models express the real and reactive power at any instant of time as functions of bus voltage magnitudes and frequency. This category of model can be used to represent static loads e.g., resistive loads. In contrast, dynamic load model expresses active and reactive powers as a function of voltage and time.

Course Outcomes:

Student will be able to:

- Understand the concepts of static load modeling.
- Understand the concepts of dynamic load modeling.