

Power System Analysis

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Course: Power System Analysis

Topic: Power Flow Studies

Semester: VI

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Teaching Methodology: Role Play

About the Course: This course is specially designed for VI Semester students. This will give the students to apply the different load flow methods to solve the power system problems They will get to know about the steps involved in Gauss-Seidel Method– Newton Raphson Method. They will eventually gain an understanding the concepts of coupled and Fast Decoupled method.



Fig.1 Dr. K V S Ramachandramurthy interacting with the role play members



Fig.2 Demonstration of Role Play

Innovative Teaching Methodology: Role Play

Role play exercises give students the opportunity to assume the role of a person or act out a given situation. These roles can be performed by individual students, in pairs, or in groups which can play out a more complex scenario.

About the Topic: Power Flow Studies

A power flow study (load-flow study) is a steady-state analysis whose target is to determine the voltages, currents, and real and reactive power flows in a system under a given load conditions. The purpose of power flow studies is to plan ahead and account for various hypothetical situations. For example, if a transmission line is to be taken off line for maintenance, can the remaining lines in the system handle the required loads without exceeding their rated values

A power flow study gives the magnitude and angle of the voltage at each bus. Once the bus voltage magnitudes and angles are known, the real and reactive power flow through each line can be computed and hence losses in a system. Power flow studies are a steady state analysis of a power system. They are called as load flow studies. Since the loads are specified in terms of power, the resulting equations are non-linear algebraic which need to be solved iteratively. We use numerical methods such as Gauss-Seidal and Newton-Raphson Methods for solving them.

Course Outcomes:

Student will be able to:

- Understand the steps involved in solving GaussSeidel Method.
- Understand the steps involved in solving Newton Raphson Method.