

42. On Iterative Methods for Solving Load Flow Analysis in Electric Power Systems

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Abstract

The study of electric power flow analysis models the relationship between real electric power demand and supply, bus power injection, transformers, bus voltages and bus angles. It is very important in system planning and stability studies. In this work, we explore the use of iterative methods to solve electric power flow problems. Bus admittance matrix is generated in an attempt to compute steady-state voltages magnitudes and angles of all buses in the network, the real and reactive power flow into every line and transformer, under the assumption of known generation and load. Illustrations were given using 5-bus and 9-bus electric power systems for better understand. And the results obtained shows that number of iterations increases proportionally with the number of buses for Gauss- Seidel technique while that of Newton -Raphson method remained almost practically constant even with varying number of buses and increase in voltage mostly amount to breakage of the system.

Keywords: Electric Power Flow, Bus admittance, voltage magnitude, real power, reactive power.