

Analytical method for reactive power compensators allocation

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Abstrak

This paper presents a novel analytical methodology to determine location for reactive power devices placement in power systems. The proposed method modifies modal analysis technique and develops new formulation to compute the Reactive Contribution Factor (RCF) of each load buses based on the inversed reduced Jacobian matrix. The objective of this research is to achieve the most stable condition as well as to minimize network losses. The proposed method is implemented at the modified IEEE 30-bus Reliability Test System (RTS) and compared with different placement. This work compares the voltage profile, eigenvalue and network losses to assess the method. The simulation results show the proposed method can provide a solution to the ideal shunt compensator placement to improve the system's voltage stability and minimizing losses.