This research paper focuses on estimating the sizing and location of shunt compensation based on load shedding approach applied to IEEE 5 Bus system using MATLAB. Since power system networks, especially the transmission lines systems have been recently operated under highly stressed conditions which in turn had led to make the load bus voltages below the permissible value, hence when a line suffers from an outage for any reason, then a decrease in voltages of one or more loads due to the inability of the other lines to meet the requirements of such loads (particularly inductive loads) may occur. In this research work an estimating method was proposed to determine the size and the amount of the reactive power required to support the bus voltage at the associated load bus whenever a line outage occurs, by identifying the weak bus required shunt compensation based on load shedding. The power deficit at the load buses (characterized by low voltage levels due to the system's inability to meet the load requirement) have been tackled alternatively through the process of shunt compensation. Partial load shedding was suggested in certain proportions for the purpose of estimating the size of reactive power required to support the voltages at the weak load bus and therefore to impede the power
deficit resulting from the outage of a line.

References


Index Terms

Computer Science Circuits and Systems
Keywords

Load Shedding, Weak bus, Critical line, Shunt compensation, Voltage performance index.