Abstract

In present day restructured power systems, increased transactions often lead to the situations where the system no longer remains in secure operating condition. To overcome such undesirable situation the Flexible AC transmission system (FACTS) controllers can be placed in a power system, which are able to provide fast and flexible control of voltage magnitude, active
Optimal Placement and Sizing of SVC for Voltage Security Enhancement

and reactive powers and to improve voltage security and stability. As investment cost of FACTS controllers is very high, these devices must be placed optimally in a power system. Static Var Compensators (SVC) is a shunt FACTS device that can be used for improvement of voltage profile in a power system. For optimal placement of SVC, this paper proposes a method that considers single line outage contingencies. On the basis of Voltage Performance Index two most critical contingencies are considered for searching the optimal location of SVC. The impact of SVC at selected optimal locations is evaluated and compared for varying load condition of the power system. The criteria for selection of optimal location consider improvement of the voltage profile and reduction in the system losses in a power system. The effectiveness of the proposed method is demonstrated on a standard IEEE 30-bus system.

Reference


Index Terms

Computer Science

Power Systems

Key words

Load flow analysis

FACTS devices

SVC

Voltage Performance Index

Voltage Profile