Abstract

Voltage instability has been given much attention by power system researchers and planners in recent years. One of the main reasons for voltage instability is reactive power imbalance in the power system. This paper proposes the use of wind power network for rectifying the problem of voltage instability. The aim of this paper is to identify the optimal location of FACTS controllers in an interconnected power network under N-1 contingency. Here, to improve the Voltage Magnitude Profile and Loadability limit Thyristor Controlled Series Capacitor and Static Synchronous Compensator are used. Cat Swarm Optimization is used to determine the optimal location and size of the FACTS controllers. In this paper IEEE 14-bus system is used for testing the proposed algorithm. Simulations are performed in MATLAB using Power System Analysis Toolbox.

References

Comparison of Series and Shunt FACTS Controllers for Voltage Stability in Wind Power Network

(INDIA); 1994.
7. Prabha Kundur (Canada, Convener), John Paserba (USA, Secretary), Venkat Ajjarapu (USA), Goran Andersson (Switzerland), Anjan Bose (USA), Claudio Canizares (Canada), Nikos Hatzargyriou (Greece), David Hill (Australia), Alex Stankovic (USA), Carson Taylor (USA), Thierry Van Custem (Belgium), and Vijay Vittal (USA). “Definition and Classification of Power System Stability”. IEEE transactions on power systems, vol-19, no.2, may 2004.
17. Abdelaziz Laifa, Mohamed Boudour. “Optimal Placement and Parameter Settings of

**Index Terms**

Computer Science  
Networks

**Keywords**

CSO, N-1 contingency, STATCOM, TCSC, Voltage stability, Wind power.