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Abstract

In an electric power system network, the continuous demand has caused it to be heavily loaded leading to voltage instability. This phenomenon has also led to voltage profile depreciation below the acceptable secure limit. The significance and use of Flexible AC Transmission System devices and capacitor placement is in order to alleviate the voltage profile decay problem. This paper presents an application of Bacterial Foraging algorithm in optimizing the rating of Thyristor Controlled Series Capacitor for voltage profile improvement, minimization of losses and voltage stability enhancement. Voltage stability level of the system is defined based on the Fast Voltage Stability Index (FVSI) approach. The IEEE 14 bus system is used as a test system in order to demonstrate the height of applicability and efficiency of the proposed system. The test result shows that the location of TCSC improves the voltage profile of the system and also minimizes the transmission line losses.

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Index Terms

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Keywords

Bacterial Foraging (bf) Algorithm Fast Voltage Stability Index (fvsi) Flexible Ac Transmission System (facts)
Multi-objective Function
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