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**Optimal location of the reactive power compensation devices in power network.**

The paper proposes a new approach to monitor operating modes of electric power systems and to the choice of optimal location of FACTS-devices. Optimization of FACTS-devices parameters has been studied. The main features of influence zones of FACTS-devices have been described in the paper and a new approach has been proposed for the clustering of network based on mutual influence of nodes.

*Key words: power system, FACTS, optimization, influence zone, cluster, power loss.*

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