Optimal allocation of D-STATCOM and reconfiguration in radial distribution network using MOPSO algorithm in TOPSIS framework

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Abstract-

Performance improvement is an important challenge for distribution network (DN) operator in many aspects. On the other hand, progress of DN performance is very valuable by allocating the optimal cost. This paper considers simultaneously optimal allocation of D-STATCOM and reconfiguration in order to decrease active power loss, improve voltage profile, and increase the loadability in radial DNs by economic considerations in a multi-objective optimization framework.
In order to make a decision from Pareto front solutions based on their attributives importance, a multi-attribute decision making procedure, is used. This procedure is based on the technique for order performance by similarity to ideal solution.
The proposed methodology has been evaluated on IEEE 33 node and IEEE 69 node radial DNs.

Index Terms-