سیویلیکا - ناشر تخصصی مقالات کنفرانس ها و ژورنال ها
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عنوان مقاله:

A New Algorithm for Optimum Voltage and Reactive Power Control for Minimizing Transmission Lines Losses

محل انتشار:

ماهنامه بین المللی مهندسی, دوره 14, شماره 2 (سال: 1380)

تعداد صفحات اصل مقاله: 8

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خلاصه مقاله:

Reactive power dispatch for voltage profile modification has been of interest Abstract to powerr utilities. Usually local bus voltages can be altered by changing generator voltages, reactive shunts, ULTC transformers and SVCs. Determination of optimum values for control parameters, however, is not simple for modern power system networks. Heuristic and rather intelligent algorithms have to be sought. In this paper a new algorithm is proposed that is based on a var iant of a genetic algorithm combined with simulated annealing updates. In this algorithm a fuzzy multi-objective approach is used for the fitness function of the genetic algorithm. This fuzzy multi-objective function can efficiently modify the voltage profile in order to minimize transmission lines losses, thus reducing the operating costs. The reason for such a combination is to utilize the best characteristics of each method and overcome their deficiencies. The proposed algorithm is much faster than the classical genetic algorithm and can be easily integrated into existing power utilities software. The proposed algorithm is tested on an actual system model of ۱۲۸۴ buses, ۷۹۹ .lines, ۱۱۷۵ fixed and ULTC transformers, ۸۶ generators, ۱۸۱ controllable shunts and ۴۲۵ loads

کلمات کلیدی:

Genetic Algorithm, Simulated Annealing, Fuzzy Multi, objective optimization, Voltage and Reactive Power Control, Loss Minimization

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