

عنوان مقاله:

Probabilistic Multi Objective Optimal Reactive Power Dispatch Considering Load Uncertainties Using Monte Carlo Simulations

محل انتشار:

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خلاصه مقاله:

Optimal Reactive Power Dispatch (ORPD) is a multi-variable problem with nonlinear constraints and continuous/discrete decision variables. Due to the stochastic behavior of loads, the ORPD requires a probabilistic mathematical model. In this paper, Monte Carlo Simulation (MCS) is used for modeling of load uncertainties in the ORPD problem. The problem is formulated as a nonlinear constrained multi objective (MO) optimization problem considering two objectives, i.e., minimization of active power losses and voltage deviations from the corresponding desired values, subject to full AC load flow constraints and operational limits. The control variables utilized in the proposed MO-ORPD problem are generator bus voltages, transformers' tap ratios and shunt reactive power compensation at the weak buses. The proposed probabilistic MO-ORPD problem is implemented on the IEEE 30-bus and IEEE 118-bus tests systems. The obtained numerical results substantiate the effectiveness and applicability of the proposed probabilistic MO-ORPD problem.

کلمات کلیدی:

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