

电力市场

基于改进非劣分层遗传算法及基点和熵多属性决策的互联电网交易方法

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摘要:

利用改进非劣分层遗传算法(non-dominated sorting genetic algorithm II, NSGA-II)对互联电网多目标交易优化模型进行求解, 得到多样化的帕雷托前沿, 为决策提供丰富的信息, 进一步与基于基点和熵的多属性决策方法结合, 筛选出最优解。算例分析结果表明, 该方法得出的解比用基于沙普利值的合作博弈法得出的解更优, 能准确提供互联电网交易的优化分配方案, 具有一定的实用性。

关键词: 多目标优化 互联电网 多属性决策 演化算法 帕雷托解集

Multi-objective Optimal Electricity Transaction of Interconnected Power Network Based on Improved Non-Dominated Sorting Genetic II Algorithm and Multiple Attributes Decision Making of Base Point and Entropy

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Abstract:

The optimization model for multi-objective transaction of interconnected power grid is solved by non-dominated sorting genetic algorithm II (NSGA-II) algorithm and the solutions over diversified Pareto front are obtained which can offer wealth of information for the decision-making; further combining the Pareto front with multiple attributes decision-making (MADM), the optimal solution is screened out. Results of calculation example show that the optimal solution attained by the proposed method is better than that obtained by Shapley value-based cooperative game method. The attained solution can provide optimized allocation scheme for electric power transaction of integrated power grid precisely.

Keywords: multi-objective optimization interconnected power grid multiple attributes decision making genetic algorithm Pareto solution set

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