电力系统

基于改进粒子群优化算法的火电机组负荷多目标优化

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摘要：

随着人们环保意识的增强，火电机组负荷的经济性与环保性优化逐渐成为研究的对象，但目前研究一般在稳态工况下进行，而没有考虑负荷频繁变化所带来的影响。文中在动态情况下以负荷调度的经济性与环保性为目标进行优化，即以负荷调度的经济性、环保性、快速性为优化目标。在优化算法上，将广义Lagrange乘子法与粒子群优化(particle swarm optimization，PSO)算法相结合，提出了一种改进PSO算法。用改进PSO算法对优化模型进行了处理，结果表明，改进后的PSO优化方法比PSO算法调节解的速度更快、解空间的搜索能力更强。

关键词：

Improved Particle Swarm Optimization Based Multi-Objective Optimization of Load Dispatching Among Thermal Power Units

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Abstract:

Along with the strengthening of environmental consciousness, the economy of thermal power units and their environmental protection performances are being researched, however at present the research only concerns steady state operation condition of thermal units and the impacts brought about by frequent variation of loads are not taken into account. In this paper, taking the economy, environmental protection performance and speediness of load dispatching under dynamic operation condition as optimizing objects, the load dispatching is optimized. For this purpose, an improved particle swarm optimization (PSO) algorithm, which integrates generalized Lagrange multiplier with traditional PSO algorithm, is proposed to process the optimization model. Simulation results show that the improved PSO algorithm can offer better and faster effects than original PSO algorithm, and its search capability in solution space is mightier.

Keywords:

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