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## 低碳策略下的多目标柔性作业车间调度

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### Multi-objective flexible job-shop scheduling based on low-carbon strategy

摘要 图/表 参考文献 相关文章 (15)

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**摘要** 为解决低碳策略下多目标柔性作业车间调度问题,在深入分析柔性作业车间多目标调度研究现状和不足的基础上,结合基于设备状态—能耗曲线的低碳策略,提出包括能源消耗、最大完工时间、加工成本和成本加权加工质量的多目标柔性作业调度模型。针对上述模型,设计了基于血缘变异的改进非支配排序遗传算法,该算法根据计算交叉染色体的血缘关系确定变异率,优化了交叉和变异策略,解决了算法的早熟问题。针对具体实例,构建了调度模型和算法,计算结果验证了算法的可行性和有效性。

**关键词** : 多目标调度, 柔性作业车间, 改进非支配排序遗传算法, 低碳策略, 血缘变异

**Abstract** : To solve multi-objective Flexible Job-shop Scheduling Problem (FJSP) under low-carbon strategy, by analyzing the current research status and insufficiency, a multi-objective FJSP optimization model based on low-carbon strategy of equipment state-energy-consumption curve was put forward, in which the energy consumption, makespan, processing cost and cost-weighted processing quality were considered. According to above model, a modified Non-dominated Sorting Genetic Algorithm (NSGA-II) with blood variation was designed. In this algorithm, the chromosome mutation rate was determined after calculating the blood relationship between the two cross chromosomes, the crossover and mutation strategy of NSGA-II was optimized and the prematurity of population was overcome. The performance of the proposed model and algorithm were evaluated through a case study, and the results demonstrated the efficiency and feasibility of the proposed model and algorithm.

**Key words** : multi-objective scheduling flexible job-shop non-dominated sorting genetic algorithm low-carbon strategy blood variation

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