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## 集团制造多主体外协订单任务制造资源配置

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### Multi-agent manufacturing resource allocation of outsourcing order in group manufacturing

摘要 图/表 参考文献 相关文章 (15)

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**摘要** 集团制造企业的外协订单任务制造资源配置过程具有多主体、多任务、多资源、多工序以及协同性的特点,增加了订单制造资源配置过程的复杂性和不确定性。针对这一问题,提出两阶段多主体外协订单任务制造资源配置方法;设计了基于成本—工期—收益的订单任务排序算法和基于PageRank的订单任务制造资源排序算法,并建立了多主体外协订单任务制造资源配置模型;运用遗传算法求解多目标下多主体外协订单任务制造资源配置模型的Pareto最优解。以某建材装备制造集团的外协订单任务制造资源配置为例,验证了所提理论方法的合理性和有效性。

**关键词** : 多主体制造资源配置, 集团制造, 任务资源排序, 遗传算法

**Abstract** : The characteristics such as multi-agent, multi-task, multi-resource, multi-process and collaboration increased the complexity and uncertainty of manufacturing resource allocation for outsourcing order in group manufacturing. Aiming at this problem, a two stage multi-agent manufacturing resource allocation method was presented, which included two stages of agent task and manufacturing resources sorting and multi-agent manufacturing resource allocation for outsourcing order. The task order sorting algorithm based on cost-schedule-gain and the manufacturing resource sorting algorithm based on PageRank were designed, and a multi-agent manufacturing resource allocation model for outsourcing order was built. The Pareto optimal solution of multi-agent manufacturing resource allocation model for outsourcing order was obtained with the genetic algorithm. The proposed model and algorithm were verified by the manufacturing resource allocation of outsourcing order in a building materials and equipment manufacturing group.

**Key words** : multi-agent manufacturing resource allocation group manufacturing task and resource sort genetic algorithms

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