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论文 最新目录 | 下期目录 | 过刊浏览 | 高级检索 << Previous Articles | Next Articles >>

有限缓冲区的多节点订单接受模型与算法

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Model and Algorithm for Order Acceptance on Multi-node Production Environment with Limited Buffer

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摘要 订单接受问题广泛存在于生产管理中,而现有多节点订单接受问题中大多不考虑缓冲区约束对订单接受的影响。针对这一问题,以缓冲区约束的多节点生产为背景,建立了订单接受模型。利用改进NEH算法、离散和声搜索算法和变邻域搜索的混合算法对模型进行求解。实验结果显示,当问题规模较小时,算法取得较好的计算效果。问题规模较大时,求解效果一般。缓冲区的大小对订单完工时间影响较小,与无限缓冲区的计算结果相似。混合算法具有较好的求解速度,能够有效求解问题模型。

关键词： 订单接受 缓冲区 多节点 混合算法

Abstract： Order acceptance exists in production management, however, the influences of buffers on order acceptance have not been considered in existing order acceptance in multi-nodes. To study this problem, an order acceptance model is set up based on multi-nodes production of buffers constraints. The hybrid algorithm with improved NEH algorithm, discrete harmony search and variable neighborhood search is proposed for solving the model. Experiments show that when the size of problem is small, good results are abtained and when the size of problem is large, general results are obtained. Completion time of order is less affected by the size of buffer and is similar to results of unlimited buffer. The computation speed of hybrid algorithm is better than other algorithms. The hybrid algorithm can solve the model.

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