

复杂制造协同物流网络资源规划的不确定性控制优化

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Uncertain control optimization of resource planning for collaborative logistics network about complex manufacturing

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摘要 复杂制造协同物流网络作为动态开放系统,其资源规划决策易受网络中随机不确定性因素影响而出现刚性敏感和稳定失效现象,此问题属于参数状态和概率分布均未知的完全不确定型问题.针对这种问题,提出了带鲁棒控制约束的期望值模型,并借助蒙特卡罗方法对资源规划决策中相关参数进行了不确定性仿真.算例结果表明,与不添加鲁棒约束的优化模型相比,该模型方法能有效控制不确定性因素的负影响,增加资源规划决策的稳定性和连续性,为解决完全不确定型问题提供了新视角.

关键词: 协同物流网络 资源规划 不确定性控制 鲁棒约束

Abstract: Collaborative logistics network about complex manufacturing is a dynamic open system. Its resource planning decision is easily influenced by stochastic uncertainty factors in network, so it presents the rigid sensitive and stable expiration phenomenon and belongs to the question that parameter status and probability distribution are unknown. In view of this completely uncertain question, the paper proposes a expected model of robust restraint, and carries uncertainty simulation on related parameter of network resource planning decision with Monte Carlo method. In comparison with optimization model which isn't constrained, the example results show that this model and method can actively control and weaken the negative influence of uncertain factors and increase the resource planning's stability and continuity. Finally, it provides a new angle of view for solving completely uncertain questions.

Key words: collaborative logistics network resource planning uncertain control robust restraint

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