工程与应用

# 炼钢连铸作业计划的混合遗传优化与仿真分析

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摘要　为提高炼钢连铸作业计划制定的效率和质量，面向生产工艺流程网络图，建立了一种基于遗传算法与蚁群算法相结合的混合智能优化方法，进行炼钢连铸生产作业计划的编制，并可实现常见扰动情况下的重计划制定；利用基于元胞自动机思想建立的炼钢连铸流程仿真模型，进行生产作业计划的仿真分析和评价。将计划编制模型与仿真模型有机结合，为作业计划的在线动态评价和自动调整提供了一种有效手段。针对某钢厂的仿真实验研究表明：提出的智能优化方法能较好地解决炼钢-连铸生产作业计划的时间不确定性优化问题，可快速生成炉次间作业无冲突的优化生产作业计划。

关键词 炼钢－连铸 作业计划优化 仿真分析 遗传算法 蚁群算法
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# Hybrid genetic algorithm optimization-based production planning and simulation analysis for steelmaking and continuous casting

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**Abstract**

Based on procedure networks，a novel optimization model which combines ant colony algorithms and genetic algorithm is proposed to improve the performance and efficiency of production planning for steelmaking-continuous casting process.The production plan is analyzed and evaluated with the simulation model based on cellular automata.The integration of planning optimization model and simulation model provides a useful tool for online evaluating and adjusting production plan，and makes it possible to replan at common disturbances.This integrated system demonstrates ability to deal with time uncertainty in production planning and to set up a conflict-free production plan in simulating cases of a steel company.

**Key words** steelmaking-continuous casting production planning optimization simulation analysis genetic algorithm ant colony algorithm

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