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Original Articles

A genetic algorithm for lot sizing and scheduling under capacity constraints and allowing backorders

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Abstract

This article addresses the problem of scheduling economic lots in a multi-product single-machine environment. A mixed integer non-linear programming formulation is developed, which finds the optimal sequence and economic lots. The model takes explicit account of initial inventories, setup times, allows setups to be scheduled at arbitrary epochs in continuous time and models backorders. To solve the problem we develop a hybrid approach, combining a genetic algorithm and linear programming. The approach is tested on a set of instances taken from the literature and compared with other approaches. The experimental results validate the quality of the solutions and the effectiveness of the proposed approach.

Keywords:

ELSP lot-sizing control production scheduling optimisation genetic algorithm

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