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Novel bi-level hierarchical production planning in hybrid MTS/MTO production contexts

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Abstract

A hybrid make-to-stock (MTS)/make-to-order (MTO) production strategy is one of the most appealing production strategies that has recently been investigated by academics and practitioners. In this paper, a hierarchical production planning (HPP) structure is developed in hybrid MTS/MTO production contexts for the first time. The proposed structure includes mid-term and short-term production planning levels by proposing a systematic and integrated approach towards tactical and operational issues. To cope with the problem, diverse novel modules are developed at each level and then they are interrelated from a hierarchical point of view. Moreover, a hybrid meta-heuristic algorithm is developed to tackle the computational complexity of a scheduling task. Finally, numerical experiments validate the proposed solution methodology.

Keywords:

hybrid MTS/MTO | hierarchical production planning | tactical planning | operational planning | genetic algorithm | simulated annealing | particle swarm optimisation

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