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Volume 51, 2013 - [Issue 5](#)

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

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Pages 1331-1346 | Received 13 Sep 2011, Accepted 23 Jan 2012, Published online: 20 Apr 2012

 Cite this article  <https://doi.org/10.1080/00207543.2012.661089>

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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

## Acknowledgements

The authors would like to acknowledge the financial support of the University of Tehran for this research under grant number 8109002/1/03. Also, they are grateful to the reviewers for their valuable, constructive comments.

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