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Takt Time Grouping: implementing kanban-flow manufacturing in an unbalanced, high variation cycle-time process with moving constraints

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Pages 6863-6877 | Received 15 May 2013, Accepted 22 Mar 2014, Published online: 22 Apr 2014

🗨️ Cite this article 🔗 <https://doi.org/10.1080/00207543.2014.910621>

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Abstract

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Grouping (TTG) for implementing kanban-flow manufacturing, when one-piece flow or DBR do not provide good results. TTG combines one-piece flow manufacturing, transfer-batch sizing and DBR concepts through the use of a constraints-based transfer-batch sizing formula. Using a discrete event simulation model, it is shown that TTG increases throughput rate as compared to one-piece flow, CONWIP and DBR approaches, with much lower WIP inventory and faster flowtime than CONWIP and DBR.

Keywords:

- flow manufacturing
- kanban
- theory of constraints
- drum-buffer-rope
- cycle time variation
- mixed model
- transfer-batch sizing
- CONWIP

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