

Accepted Manuscript

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PII: S0360-8352(18)30239-0
DOI: <https://doi.org/10.1016/j.cie.2018.05.030>
Reference: CAIE 5236

To appear in: *Computers & Industrial Engineering*

Received Date: 17 August 2017
Revised Date: 11 May 2018
Accepted Date: 18 May 2018

Please cite this article as: Ying, K-C., Lin, S-W., Minimizing Makespan for No-Wait Flowshop Scheduling Problems with Setup Times, *Computers & Industrial Engineering* (2018), doi: <https://doi.org/10.1016/j.cie.2018.05.030>

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Minimizing Makespan for No-Wait Flowshop Scheduling Problems with Setup Times

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ABSTRACT

This study investigates no-wait flowshop scheduling problems with sequence-independent and sequence-dependent setup times aimed at minimizing the makespan. We propose an efficient two-phase matheuristic, which can optimally solve all tested instances of three existing benchmark problem sets and a new generated large-sized test problem set, with up to 20-machine and 2000-job test instances, in acceptable computational times. This is a dramatic improvement over all previously known algorithms. In view of the strongly *NP*-complete nature of the two problems addressed herein, this study contributes an exact method that can find optimal solutions for solving these problems with the efficiency necessary to meet real-world scheduling requirements.

Keywords: scheduling; no-wait flowshop; setup times; makespan; matheuristic.

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