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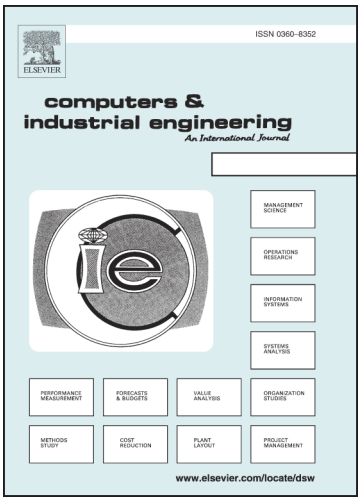

Optimization algorithms for proportionate flowshop scheduling problems with variable maintenance activities

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Optimization algorithms for proportionate flowshop scheduling problems with variable maintenance activities

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ABSTRACT

Proportionate permutation flowshop (PPF) is a class of flowshop problems that has appeared in the literature since the early 1980s. However, no research has been conducted on PPF with variable maintenance activities (VMAs). To remedy this research gap, this study proposed optimization algorithms for six PPFs with equal- and unequal-duration VMAs, aiming to minimize their total completion time, maximum lateness, and maximum tardiness, respectively. All the problems studied here were optimally solved in polynomial times using the proposed algorithms. Accordingly, the proposed optimization algorithms could be applied by decision-makers in actual PPF scheduling environments.

Keywords: Scheduling; Proportionate permutation flowshop; Variable maintenance activities; Optimization algorithm

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