Multi-Objective Simulated Annealing Algorithms for Scheduling Just-In-Time Assembly Lines

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Abstract : New approaches to sequencing mixed-model manufacturing systems are present. These approaches have attracted considerable attention due to their potential to deal with difficult optimization problems. This paper presents Multi-Objective Simulated Annealing Algorithms (MOSAA) approaches to the Just-In-Time (JIT) sequencing problem where workload-smoothing (WL) and the number of set-ups (St) are to be optimized simultaneously. Mixed-model assembly lines are types of production lines where varieties of product models similar in product characteristics are assembled. Moreover, this type of problem is NP-hard. Two annealing methods are proposed to solve the multi-objective problem and find an efficient frontier of all design configurations. The performances of the two methods are tested on several problems from the literature. Experimentation demonstrates the relative desirable performance of the presented methodology.