An Approach of No Wait Flow Shop Scheduling with Unrelated Parallel Machine

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ABSTRACT

In this research, no wait flow shop scheduling problem with unrelated parallel machine is considered. In order to search for Pareto optimal solutions of multi-objective optimization problems, we propose two heuristic algorithms to get a near optimal schedule in a reasonable computation time. Hybrid genetic algorithm and particle swarm optimization are performed in heuristics. In the past few years, most of research assumes setup time or removal times is even negligible or part of the processing time. However, we look the setup, processing, and removal times as separable, then take the sequence-independent setup time and dependent removal time into account. Taguchi method has been widely applied in the practical applications for optimizing the process parameters in the manufacturing process. During the research, the parameters used in the heuristics that affect the solution quality is analyzed and designed by Taguchi method; then for the constructed heuristic, a good parameter setting is suggested. The experimental results are reported, and provided for the references for the further research.

Keywords : no wait ; non-identical parallel machine ; flow shop ; setup time ; removal time ; Multiple Objective ; Hybrid genetic algorithm (HGA) ; Particle swarm optimizer(PSO)

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