Precast Production Scheduling Using Genetic Algorithms

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ABSTRACT

The goal of production scheduling is to strike a profitable balance among on-time delivery, short customer lead time, and maximum utilization of resources. A good one will bring company the most effective utilization of resources and reduce wastes. However, current practices in precast fabrication are fairly basic and depend greatly on experience, resulting inefficient resource utilization and late delivery. Computational techniques have been proven as an effective way in scheduling. To enhance precast production scheduling, this research develops a flow shop sequencing model. In the model, constraints encountered in practice and buffer sizes between stations are taken into account. A multi-objective genetic algorithm is used to search for optimum solutions with minimum makespan and tardiness penalty. The performance of proposed method is validated using a case study. Application results show that the multi-objective genetic algorithm can successfully search for optimum solutions for the model. In addition, considering buffer sizes between stations is crucial in acquiring reasonable and feasible precast production schedules.

Keywords : Precast ; scheduling ; genetic algorithm ; flow shop ; sequencing model ; buffer

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