Applying genetic algorithm for hybrid job shop scheduling in a cosmetic industry

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Abstract

This work considers the problem of scheduling a given set of jobs in a Flexible Job Shop in a cosmetic industry, located in Colombia, taking into account the natural complexity of the process and a lot of amount of variables involved, this problem is considered as NP-hard in the strong sense. Therefore, it is possible to find and optimal solution in a reasonable computational time for only small instances, which in general, does not reflect the industrial reality. For that reason, it is proposed the use of metaheuristics as an alternative approach in order to determine, with a low computational effort, the best assignment of jobs in order to minimize the number of tardy jobs. This optimization objective will allow to company to improve their customer service. A Genetic Algorithm (GA) is proposed. Computational experiments are carried out comparing the proposed approach versus instances of literature by Chiang and Fu. Results show the efficiency of our GA Algorithm.

Keywords

Scheduling, Genetic Algorithms, Cosmetic Industry, Hybrid Jobshop