Application of Tabu Search for Cellular Scheduling in a Job Shop Environment

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ABSTRACT

Cell formation is one of the most important problems during the cellular manufacturing system (CMS). Due to its NP-Complete characteristics, it is difficult to obtain optimal cell formation in an acceptable time, especially for problems with large scales. The Job Shop Scheduling Problem (JSP) is the quite important question in the academic and the industrial field continuously. Because it has NP-Complete characteristics, it is difficult to obtain an optimal solution in an acceptable time. This study combines the cell formation and scheduling problem in the job shop environment. The objective is to minimize the makespan for the addressed problem. The addressed problem is divided into two solving two stages, cell formation and job shop scheduling for the corresponding cellular conditions. Computational results obtained from the comparison with those from the literature show the efficiency and efficacy of the proposed algorithm.

Keywords: cellular manufacturing system ; cell formation ; makespan ; tabu search algorithm ; job shop scheduling problem

Table of Contents

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