Ergonomic job rotation, multi-objective scheduling problem in the cellular manufacturing environment regarding the employee skill levels

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ABSTRACT

In the present paper a model is proposed for ergonomic job rotation scheduling problem in the cellular manufacturing environment with regard to the employees’ skill levels. In this respect, a multi-objective integer programming model for manpower job rotation scheduling is presented in which three objective functions are considered at the same time. The first objective function aims at minimizing the injuries resulted from exposure to workplace ergonomic risks; the second objective function is added to the model in order to ensure a uniform distribution of tasks using uniform distribution of idle hours among employees; and lastly, the third function is designed to ensure the fit between the staff allocation and machines according to their related skill group.

Since that in the literature on ergonomic job rotation scheduling, the employees’ skill level in the cellular environment have not been considered seriously, the present paper proposes a new model for the implementation of job rotation system in the cellular manufacturing environment.

KEYWORDS

Job rotation scheduling, Ergonomic risk, Cellular manufacturing, Employee skill levels