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Workstation Optimization by Use of Genetic Algorithms

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Abstract: Nowadays every competitive advantage in the industrial sector is temporary, and manufacturing firms in an effort to remain competitive must innovate in their production systems. That's why it is not enough to invest in expensive machinery, and it is imperative to develop methodologies of each organization to improve its processes. This work focuses on the development of a tool for process improvement based on genetic algorithms in a maquiladora industry of Juarez, Chihuahua, Mexico. This instrument aims to optimizing a workstation setup, whose cost function is given by a time study in relation to the basic motions of reach, grasp, move and release, which represent almost 50% of all work in a workstation. The purpose of the algorithm is to find the best set up of equipment and material at the station; therefore, obtaining a better flow in the station which directly impacts the flow of the production line. As a result, it is obtained a decrement in terms of time and unnecessary motions which leads to increase productivity in the process.

Keywords: Workstation Optimization, Genetic Algorithms, Continuous Improvement