

Optimization of Automotive Manufacturing Layout for Productivity Improvement

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ABSTRACT

This paper deal with an optimization of automotive manufacturing layout by using meta-heuristics approach aided with discrete event simulation (WITNESS Simulation). The objective of this study is to balance the workload, increase line efficiency, and improve productivity by optimizing assembly line balancing (ALB) using Genetic Algorithm. The current assembly line layout operated under the circumstance where idle time is high due to unbalance workload. After the optimization process takes place, the workload distribution in each workstation has shown a significant improvement. Furthermore, productivity improvement was gained after the optimization followed by increment in term of line efficiency by 18%. In addition, the number of workstation needed to assemble the product can be reduced from current layout (17 workstations) to an improved layout (14 workstations). The current study contributes to the implementation of Genetic Algorithm in ALB to improve productivity of related automotive manufacturing industry.

Keywords: *Assembly Line Balancing, Genetic Algorithm, Productivity Improvement*

Introduction

Product quality and the capability to adapt to consumer demands are pivotal perspective that must be thought seriously especially in automotive industry. Administration frameworks need to be design comprehensively to ensure the