RFID-ENABLED PRODUCTION SCHEDULING IN MANUFACTURING: A SIMULATION STUDY

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Abstract

This study aims at addressing the benefits of RFID system in manufacturing. Economic Analysis to evaluate and compare the costs and benefits of implementing RFID is explored. We take a case study of an organization that is considering adding RFID to integrate with its existing manufacturing enterprise system (MES). We illustrate the dynamic system simulation to assess the feasibility of RFID deployment. Our analysis is based on the comparison of the following four different scenarios: non-AIT (Automatic Identification Technology) environment, 1D barcode, 2D barcode, and RFID system. The main purpose of this study is not to change the physical flow of parts, components, WIPs, or finished products in the manufacturing processes but, rather, to examine whether or not more accurate information through RFID-based solutions on the item level can improve production scheduling and the overall manufacturing plant performance. Based on the economic analysis, 2D barcodes and RFID offer a great opportunity to reduce costs of operations and improve production scheduling compared to the 1D barcodes. However, 2D barcodes still require a line of sight for data identification and they cannot be reused or updated once they are printed while these issues can be easily overcome by using RFID. Thus, we believe that RFID technology can be actually applied in manufacturing area.