Simulation of real time tracking system using RFID technology to enhance quality activities in flexible manufacturing system

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Abstract
Flexible Manufacturing System (FMS) attracts industries to adopt it for its high productivity and flexibility. Recent improvement of FMS focuses on real-time tracking to ease planning, control, and monitoring of final products. One of the potential tools to be used in tracking, monitoring, and controlling the final products is the Radio Frequency Identification (RFID) technology. Implementing RFID will lead to lower cost and high efficiency. This paper simulated a real-time tracking system using RFID technology to enhance and track the quality and inspection activities in FMS using Coloured Petri Net (CPN) method. The proposed system suggests using RFID tags on boxes that carry the parts to be processed in the manufacturing system rather than putting the tag on the parts themselves. RFID reader/writer capability has been assumed in the model. Therefore, updating the data during the process will be updated, such as reference number and updated status of parts in its further steps in the system. This gives a chance to use the box with tag again after accomplishing all required operations in the production system for other parts. Thus, this method helps to reduce the required cost for manufacturing. The simulation of the system using CPN tool shows that parts can be tracked successfully and provides more enhancements for production.

Author keywords
RFID, tracking system, quality management, CPN

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