

Maintenance decision-making process for a multi-component production unit using output-based maintenance technique: A case study for non-repairable two serial components' unit

Abstract

This paper presents the maintenance decision-making process for the case of a multi-component unit based on output-based maintenance (OBM) technique. OBM is an innovative maintenance technique that applies condition based maintenance (CBM) approach. The principle of OBM is to use machine output measure as the main monitoring parameter for maintenance decision making. A multi-component decision algorithm for the case of non-repairable two serial components unit based on the OBM technique is proposed to illustrate the process of maintenance decision making. The proposed decision algorithm is designed and developed based on 'rule-based' decision tree approach, which makes the entire process of decision making easy to understand and interpret. Two maintenance decisions are considered to be decided upon: the right time to perform maintenance and the right component that requires maintenance. An example using a real industry case is presented to demonstrate the applicability of the proposed decision algorithm in making maintenance decisions. Validation result shows that the proposed model provides practical and reliable decisions. This paper ended with a conclusion and some recommendations for future studies.

Keywords

Maintenance decision-making; Maintenance technique; Multi-component unit; Output-based maintenance; Product quality characteristic; Production machine