Integrated Production Maintenance And Quality Model For Imperfect

Processes

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Summary

In this paper, we develop an integrated model for the joint optimization of the economic production quantity, the economic design of (x) over bar-control chart, and the optimal maintenance level. This is done for a deteriorating process where the in-control period follows a general probability distribution with increasing hazard rate. In the proposed model, Preventive Maintenance (PM) activities reduce the shift rate to the out-of-control state proportional to the PM level. Compared to the case with no PM, the extra cost of maintenance results in lower quality control cost which may lead to lower overall expected cost. These issues are illustrated using an example of a Weibull shock model with an increasing hazard rate.

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