

Abstract

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An Integrated cost optimisation maintenance model for industrial equipment”.

Purpose – The purpose of this paper is to develop an integrated-cost optimization maintenance model for industrial equipment, based on a balance between preventive and corrective maintenance costs.

Design/methodology/approach – The proposed model is mathematically based and takes into consideration the stochastic nature of equipment failures. The output from the model is a cost distribution against time from which the minimum cost may be found for a particular period and this period is defined as the optimum lifespan of the machine part. **Findings** – The output from the proposed model was constrained to the production conditions on machine level. This constrained output was then refined subject to recent failure trends in comparison with historical trends.

Guidelines have also been given for a smooth completion of the maintenance actions on a machining cell level. The anticipation of the failure rate of every machine-part is made possible as well as the improvement of the part's availability at an extra financial cost that would be clearly anticipated. The results promise improvement in equipment availability, inventory and workforce planning, along with reductions in failure rates. **Practical implications** – The implementation of the proposed model is expected to have a significant impact on an industrial organisation in terms of reducing its maintenance-related costs, production lines backlogs and scrap rates. **Originality/value** – The angle, from which the paper approaches the maintenance problem in industry, is original in nature and beneficial in result. It allows the user to have a deep understanding of his/her industrial domain without being involved in too much theoretical derivation. It also helps the user to treat only the contaminated spot (machine-part) and not the whole assembly (the machine), which adds accuracy and potential impact to the output.