

An Optimal Repeat Inspection Plan With Several Classifications

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Summary

Multicharacteristic critical components exist in many systems. Such components could be a part of an aircraft, space shuttle or a gas ignition system. A component is critical if it causes disaster or a very high cost upon failure. In this paper, a new inspection plan for critical multicharacteristic components is presented. A mathematical model that depicts the plan is developed. An algorithm is proposed for finding the optimal number of repeat inspections and the sequence of characteristics for inspection that minimizes expected total cost per accepted component. The expected cost consists of the cost of inspection and the cost of misclassifications. The inspection plan and the model developed generalize existing models in the literature and provide a more realistic formulation. An example is given to demonstrate the plan and the model.

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