Economic Statistical Design Of (X)Over-Bar Control Charts For Systems

With Gamma (Lambda,2) In-Control Times

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Summary

In this paper, gamma (lambda,2) distribution is considered as a failure model for the economic statistical design of (x) over bar control charts. The study shows that the statistical performance of control charts can be improved significantly, with only a slight increase in the cost, by adding constraints to the optimization problem. The use of an economic statistical design instead of an economic design results in control charts that may be less expensive to implement, that have lower false alarm rates, and that have a higher probability of detecting process shifts. Numerical examples are presented to support this proposition. The results of economic statistical design are compared with those of a pure economic design. The effects of adding constraints for statistical performance measures, such as Type I error rate and the power of the chart, are extensively investigated.

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