

Attribute Inspection Control Charts for the Joint Monitoring of Mean and Variance ^{*}

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Abstract

Novel control charts that are based on the inspection of attributes and use traditional control limits are proposed for the joint monitoring of mean and variance. The main advantage is that it is easier and cheaper to perform an attribute inspection than to obtain the actual values of the quality of interest in a variable-type inspection. The charts introduced here are tested through Monte Carlo simulations, and their efficiency confirmed, despite requiring larger sample sizes. Because the new control charts use attributes, which are easier to determine than physical measurements, they can be considered a competitive alternative to the traditional approach. A numerical example is presented to illustrate the use of the new tool and demonstrate its ease of use.

Keywords: Quality control, $\bar{X} - S^2$ control charts; noncentral Chi-square chart; attribute and variable control charts; average run length.

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