

Developing Variable Repetitive Group Sampling Control Chart Using Regression Estimator

Authors : Liaquat Ahmad, Muhammad Aslam, Muhammad Azam

Abstract : In this article, we propose a control chart based on repetitive group sampling scheme for the location parameter. This charting scheme is based on the regression estimator; an estimator that capitalizes the relationship between the variables of interest to provide more sensitive control than the commonly used individual variables. The control limit coefficients have been estimated for different sample sizes for less and highly correlated variables. The monitoring of the production process is constructed by adopting the procedure of the Shewhart's x-bar control chart. Its performance is verified by the average run length calculations when the shift occurs in the average value of the estimator. It has been observed that the less correlated variables have rapid false alarm rate.

Keywords : average run length, control charts, process shift, regression estimators, repetitive group sampling

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