Establishing Control Chart Limits for Rounded Measurements

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Abstract : The process of rounding off measurements in continuous variables is commonly encountered. Although it usually has minor effects, sometimes it can lead to poor outcomes in statistical process control using X chart. The traditional control limits can cause incorrect conclusions if applied carelessly. This study looks into the limitations of classical control limits, particularly the impact of asymmetry. An approach to determining the distribution function of the measured parameter $\bar{y}$ is presented, resulting in a more precise method to establish the upper and lower control limits. The proposed method, while slightly more complex than Shewhart's original idea, is still user-friendly and accurate and only requires the use of two straightforward tables.

Keywords : SPC, round-off data, control limit, rounding error
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