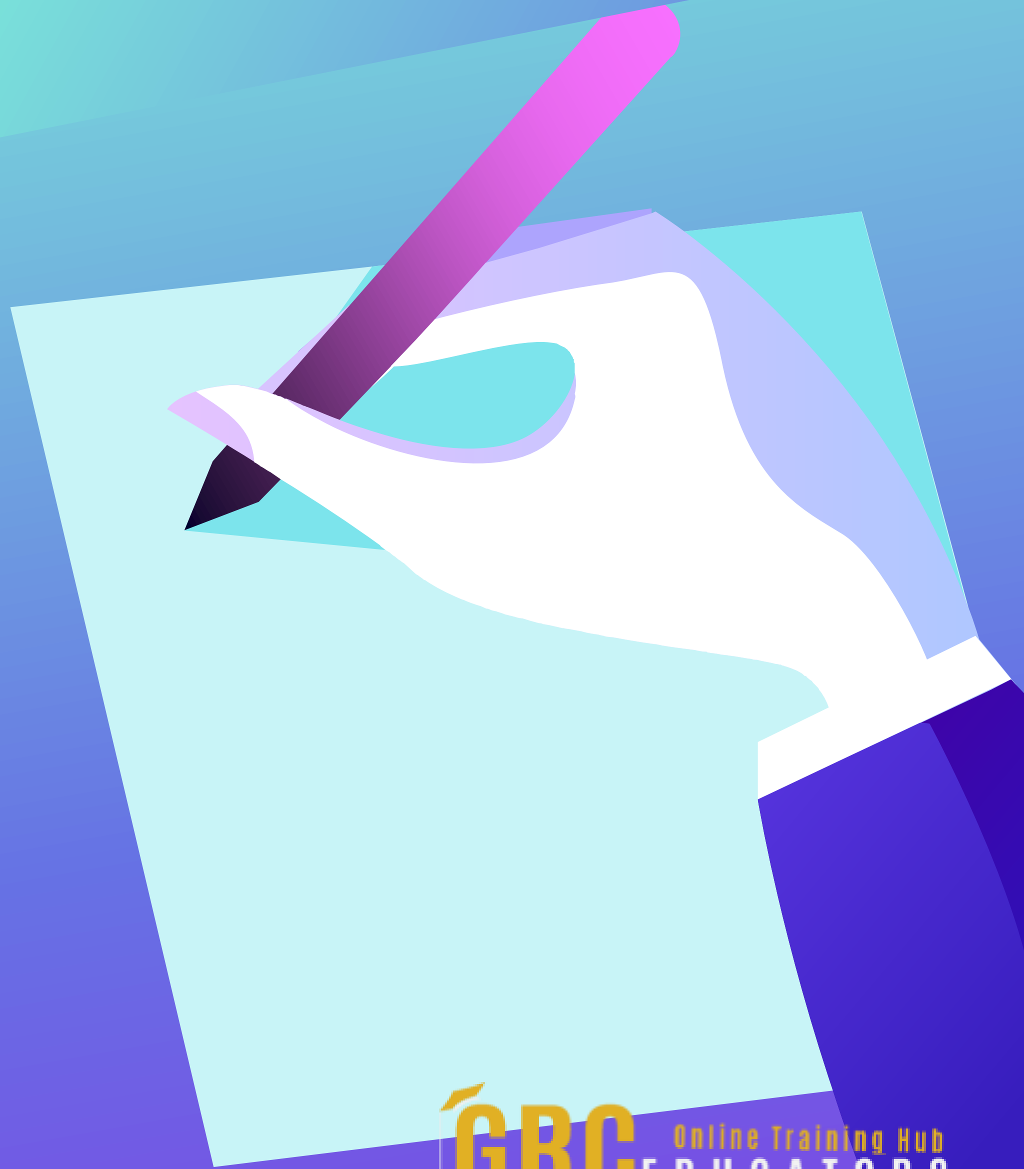
GRC EDUCATORS
Online Training Hub
Axons Technology and Solutions

Webinar on

What To Do When It's Not A Bell Curve

Learning Objectives

- *Know when a CTQ variable is likely to follow a non-normal distribution, and know how to perform statistical tests that prove beyond a quantifiable reasonable doubt that the distribution is not a bell curve. Know how to test other distributions to determine whether they are appropriate models for the CTQ characteristic. These include the normal probability plot, Anderson-Darling test, and histogram with the chi-square test for goodness of fit.*
- *Know how to address lower detection limits, i.e. what to do when "zero does not mean zero" when, for example, measuring trace contaminants or impurities*



- *Know how to create SPC charts that accommodate non-normal distributions with appropriate control limits; limits that have the same false alarm risk (0.135% for each) as for traditional Shewhart charts*

- *Calculate process performance indices that reflect accurately the nonconforming fraction (DPMO) from the process, and explain to customers and other stakeholders the underlying principles behind these calculations*

This webinar will be one defect or nonconformance per billion opportunities for that specification limit IF the CTQ variable follows a bell curve.

PRESENTED BY:

William A. Levinson, P.E., FASQ, CFPIM is the principal of Levinson Productivity Systems, P.C. He is an ASQ Certified Quality Engineer, Quality Auditor, Quality Manager, Reliability Engineer, and Six Sigma Black Belt, and the author of several books on quality, productivity, and management.

On-Demand Webinar

Duration : 60 Minutes

Price: $200

Webinar Description

Traditional statistical process control (SPC) and process capability assessment techniques assume that the critical to quality (CTQ) variable follows a normal (bell curve) distribution. This condition is fulfilled far more often in textbooks than in real factories, laboratories, and so on.

If the statistical distribution is not a bell curve, estimates of the nonconforming fraction (defects per million opportunities, DPMO), can be off by orders of magnitude. A purportedly "Six Sigma" process can, in fact, be completely non-capable under these conditions.

Textbook SPC methods and process capability study methods rely on the assumption that the CTQ characteristic follows a normal or bell curve distribution. The 3-sigma control limits of the textbook Shewhart SPC chart have false alarm risks of 0.135% (each) that an individual measurement or sample average will fall outside the control limits if the process is centered on its nominal. I

f not, however, the false alarm risk can be five or ten times as great, which will waste people's time and undermine confidence in SPC as a quality management tool.

Process capability and process performance indices are the number of 3-sigma process widths between the process mean and the specification limits. A process performance index of 2, for example, means there are six process standard deviations (Six Sigma) between the process mean and the specification limit in question.

This means there will be one defect or nonconformance per billion opportunities for that specification limit IF the CTQ variable follows a bell curve. If not, the nonconforming fraction can be a thousand or ten thousand times greater than that calculated under the assumption of a normal distribution.

It is fortunately possible, however, to deploy SPC charts whose control limits are based on the actual underlying distribution, and also to calculate process performance indices that reflect accurately the nonconforming fraction from any distribution. The latter procedure is in fact sanctioned by the Automotive Industry Action Group's authoritative SPC manual.

Who Should Attend ?

Quality engineers and technicians, and others with responsibilities for SPC charts and process capability studies.

To register please visit:

www.grceducators.com
support@grceducators.com
740 870 0321