

SPC Class Outline

1. Introduction

- a. What is the difference between SPC and SQC?
 - i. SPC – Statistical Process Control
 - ii. SQC – Statistical Quality Control
- b. What will SPC do for you?
- c. The advantages of using SPC together with SQC.

2. By The Numbers

- a. Standard Deviation (σ).
 - i. Sigma (estimated)
 - ii. Sigma (individuals)
- b. Process Capability Index
 - i. Cp
 - ii. Cpk
 - iii. Cr
- c. Kurtosis (k)
- d. Skewness

- e. Chi Squared
- f. X-bar
- g. X bar bar
- h. Control Limits

3. Charts

- a. Histogram
- b. X-Bar/R
- c. X-Bar Standard Deviation
- d. Chart of Individuals
- e. Median/Range
- f. Attribute Charts
 - i. p-charts
 - ii. np-chart
 - iii. c-chart
 - iv. u-chart

4. SPC (Measuring the Process)

- a. Decide what processes to measure.

- b. Reduction methods.
- c. How often do you want to take measurements?
- d. Remove assignable cause reasons.
- e. Sensors

5. SQC (Measuring the part)

- a. Decide what dimensions to measure.
- b. Measuring devices.
- c. Attributes
- d. Procedures

6. Setting up the SPC.

- a. Process Sheet
 - i. Specs
 - ii. Control Limits.
 - iii. SPC Settings
 - iv. SPC Enables

7. Setting up the SQC

- a. SQC Sheets

- i.** Interval
 - ii.** Cycles
 - iii.** Part per cycle (PPC)
 - iv.** Setting up variables
 - v.** Spec Limits
 - vi.** Control Limits
- b.** Linking the SQC sheet to a process sheet.

8. Additional Data Collection Setup

- a.** Process Exception Logging
 - i.** Uses and recommendations
 - ii.** How to enable it.
- b.** Parameter Recording Frequency
 - i.** Uses and recommendations
 - ii.** How to set it up.

9. Auto SPC Exclusions

- a.** Cause Reasons
- b.** Excluding auto SPC sample

10. Data Entry

- a. Manual SPC**
 - i. Initiate from the MIU.**
 - ii. Initiate from the Real-time display.**
- b. SQC data entry**
 - i. Enter variable data at the MIU**
 - ii. Enter variable data in Prostat Sample Data Edit.**
- c. Tying SQC data with manual SPC data.**

11. Distribution Charts (Histograms)

- a. Normal Distribution**
- b. Symmetrical but not normal**
- c. Skewed Distributions**
- d. More than one mode/peak**

12. Regression Analysis (Correlation)

- a. How to use.**
- b. Correlation coefficient (r)**
- c. Significance**

13. Control Charts

- a.** X-bar
- b.** R Charts
- c.** Attribute Charts
- d.** Chart of Individuals
- e.** Cause Reasons
 - i.** Assignable cause reasons.
 - ii.** Non-assignable cause reasons.
 - iii.** Fishbone Diagrams
- f.** Patterns
 - i.** Cycles.
 - ii.** Freaks.
 - iii.** Gradual change in level.
 - iv.** Grouping or bunching.
 - v.** Instability.
 - vi.** Interaction.
 - vii.** Mixtures.
 - viii.** Natural pattern.

- ix.** Stable forms of mixture.
- x.** Stratification.
- xi.** Sudden shift in level.
- xii.** One chart appears to follow another.
- xiii.** Trends.
- xiv.** Unstable forms of mixture.

14. Reviewing the Data

- a.** Setting Tree Window
 - i.** What data do you want?
 - 1.** Job.
 - 2.** Machine
 - 3.** Tool
 - 4.** Part
 - ii.** Setting date range.
 - iii.** Enabling attribute charts.
 - iv.** SQC/SPQ Detail Report.
 - v.** SQC.SPC Summary Report.