Fundamentals of Statistical Process Control (SPC) Seminar

COURSE OBJECTIVES
This Statistical Process Control (SPC) course presents a number of valuable tools to assist you in evaluating process variation and to make sound decisions based on your data.

Topics covered included the following:

- Pareto Charts and Check sheets for failure and Visual Data
- Histograms for understanding variation in measurable data
- Variables and Attribute Control Charts including p Charts for varying sample sizes
- Process Capability and Yield Determination Studies
- Correlation Studies with Guard-banding
- Interpretation and Corrective Action including Out-Of-Control guidelines
- Correlation and Regression

LEARNING OBJECTIVES
Upon completion of this course, participants will be able to do the following:

- Perform Yield Determination Studies
- Construct p, NP, and C Charts for attribute process control
- Be able to construct Ave. and Range control charts for variables data
- Construct 90 and 95% Confidence.
- Distinguish between Process Control and Process Capability.
- Perform a Correlation Studies and interpret results.

WHO SHOULD ATTEND
This course is intended for those involved in manufacturing process and test who want a better understanding of statistics in the manufacturing process for the purpose of making better decisions.
COURSE OUTLINE

Chapter 1: INTRODUCTION TO SPC
• Benefits of Metrics and SPC
• SPC Tools and Implementation Strategy

Chapter 2: PROBLEM SOLVING TOOLS
• Cause and Effect Diagrams (Fishbone)
• Check Sheets
• Pareto Analysis using Excel with Excel™

Chapter 3: DESCRIPTIVE STATISTICS
• Measures of Central Tendency and Variation
• Histograms and Specification Limits with exercise using Excel™
• SPC vs. Process Capability

Chapter 4: PROCESS CAPABILITY AND YIELD STUDIES
• "Central Limit Theorem"
• C_p and C_pk Indices — A practical approach
• Yield Determination & Improvement

Chapter 5: PROCESS CONTROL TOOLS FOR VARIABLES DATA
• X Bar & R Chart
• X Bar & S Charts (n>10) (for reference)
• Short Run Charting Techniques

Chapter 6: PROCESS CONTROL TOOLS FOR ATTRIBUTE DATA
• NP Charts
• C Charts
• P Charts (fraction defective)

Chapter 7: CORRELATION and REGRESSION
• Correlation Studies
• Regression Analysis and Coefficients
• Guard-banding for Process Optimization

Chapter 8: INTERPRETATION and CORRECTIVE ACTION
• Interpreting Trends and Shifts in Data
• Planning Corrective Action
• Implementing Continuous Process Improvement

Appendix Terms and Definitions
Formula Summary