

## 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**