

Applying Statistical Process Control: New Opportunities / New Challenges

The basic philosophy and tools of Statistical Process Control (SPC) are now well over seventy years old. They arose in an era of data scarcity and production that was manually performed and controlled. However, times have dramatically changed. Automated processes, high-volume data collection and storage, ever-increasing computational capability, powerful and user-friendly statistical software, and increased off-shore manufacturing are now the norm. They present challenges as well as opportunities for new and improved SPC applications. The popularity of "Six Sigma" performance improvement programs has demonstrated that the need for very high quality processes, both manufacturing AND non-manufacturing, as well as continuous process improvement has only intensified. Indeed, the core principles underlying the birth of SPC - the measurement and reduction of variability - are as valid today as they were seventy years ago.

Course Outline

Day 1

- The Quality Imperative in the 21st Century
 - The Role of SPC in Process Quality Management
- Ten Principles of Variation
 - Describing Variation: Statistical & Graphical Methods
 - Types of Variation: Common, Special, & Systematic/Structural
- Control Charts for Variables Data: Classic SPC
 - Xbar & R, Xbar & S Charts, Individuals Charts
 - Methods of Control Chart Construction & Modification
 - Rules for Chart Interpretation
 - Three Stages of Control Chart Use
- Rational Sub-grouping
 - How to Correctly Sample for Control Charts
 - Identifying the Right Chart for Your Data
- Control Charts for Attributes
 - p-, c-, u-charts
 - Individuals Charts

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Day 2

- Process Capability:
 - Indices and Assessment Methods
 - Dealing with Non-normal Data
 - Sampling and Sample Size issues
- Modern SPC Applications: Common Problems & Solutions
 - Short Production Runs
 - Non-Normal Data
 - Autocorrelated Data
 - "Drifting" Processes
 - Very Low Failure Rate Processes
 - Complex Sampling & Batch Processing
 - High-volume Sampling
 - Multi-Characteristic Processes
- Control Plans: Requirements for Successful SPC Implementation

Who Should Attend

Managers, engineers, or personnel in manufacturing, engineering, quality assurance, or related disciplines who are responsible for quality or productivity improvement initiatives or SPC implementation in their organizations.

Prerequisites

No pre-requisites are necessary for course participation, although previous exposure to basic statistical concepts is helpful.

How They Will Benefit

By the end of the course, participants will have gained:

- A firm grasp of the essential concepts and tools of SPC;
- Motivation and confidence to actively apply standard SPC methods in process improvement and control initiatives in their work environment;
- Insight into how SPC needs to be implemented effectively in common "non-standard" processing environments;
- Awareness of a variety of proven and innovative SPC techniques useful in non-standard processing contexts.