Measurement Systems Analysis (MSA) Including Advanced Analysis (ANOVA)

Course Duration: 2 Days - 8 Hours/day

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Seminar Content

This two-day seminar is designed to provide participants with an understanding of the importance of MSA in controlling and improving the production process and to give students a practical knowledge of using statistical methods in analyzing the measurement system.

The approaches discussed and employed in this course are consistent with the intent and guidelines in the MSA 4th Edition Reference Manual issued by GM, Ford and FCA through the AIAG.

Learning Objectives

- Explain bias, linearity, stability, repeatability and reproducibility
- Identify the type of MSA study that is appropriate for the situations
- Explain discrimination and number of distinct categories
- Identify all important aspects of setting up a study
- Explain the acceptance criteria for gage R&R studies
- Explain ANOVA and apply it to GRR Analysis
- Analyze automated and non-replicable measurement systems
- Analyze attribute measurement systems
- Develop an approach to measurement systems planning

Seminar Outline

- What is a Measurement System?
- Statistical Properties of Measurement Systems
- Discrimination & Uncertainty

- Bias, Linearity and Stability
- Breakout Exercise: Bias
- Breakout Exercise: Bias & Linearity
- Breakout Exercise: Stability
- GRR Studies
- Breakout Exercise: Graphing GR&R
- Breakout Exercise: Calculating GR&R
- Advanced Analysis – Analysis of Variance (ANOVA)
- Automated and Non-Replicable Systems
- Non-Replicable Case Study
- Attribute MSA
- Breakout Exercise: Attribute Analysis
- Breakout Exercise: Calculating Attribute Analysis
- Measurement Planning

Who Should Attend

- Quality Managers
- Quality System and Lab Technicians
- Management Representatives
- Internal Auditors who audit MSA
- Persons responsible for planning, using and maintaining measurement systems
- Engineers and individuals responsible for process improvement

Seminar Materials

Each participant will receive a seminar manual and a workbook including all team breakout exercises.

Pre-Requisite

A basic understanding of computational mathematics, a partial understanding of elementary applied statistics, and a basic background in statistical process control are important.

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