

Measurement Systems Analysis (MSA)

Understanding the variation contributed by your measurement systems is a prerequisite to understanding and reducing the variation in your processes and products. This hands-on two day seminar thoroughly explains the concepts behind MSA and demonstrates the proper techniques for performing variable and attributes gage studies.

Students also see how to perform the calculations using Minitab and Microsoft Excel.

Hours: 8 a.m. – 4 p.m.

Length: 2 day

Course Objectives

Participants will learn:

- The methods and techniques presented in the AIAG MSA reference manual.
- The concepts associated with measurement system linearity, stability, bias, repeatability and reproducibility
- How to conduct attribute and variable gage studies
- How to calculate and evaluate the results of the gage studies.

Who Should Attend:

QA specialists, process engineers, metrology staff, and others involved in planning and conducting gage studies.

Related Seminars:

- ISO 9001:2015
- IATF 16949
- APQP
- Process FMEA
- Design FMEA
- PPAP



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Seminar Content

Introduction to MSA

- Relationship with ISO 9001:2015 & IATF 16949.
- Relationship with APQP
- The AIAG MSA Manual

Understanding Variation

- Variation in Real Life
- Process Variation
- Measurement System Variation
- Workshop: Sources of Measurement System Variation
- The Impact of Variation

Introduction, Purpose and Terminology

- Basic Terminology
- Standards and Traceability
- Equipment Terminology
- Location Variation Terminology

Measurement System Planning

- ISO 9001:2015 & IATF 16949 Requirements
- PPAP Requirements
- Phase 1 and 2 Studies
- Measurement System Strategy
- Study Considerations
- Study Preparations
- General Study Guidelines

Bias, Linearity and Stability Studies

- Determining Stability
- Determining Linearity
- Determining Bias

Determining Repeatability and Reproducibility

- Determining GR&R
- Acceptance Criteria
- Range Method
- Workshop: Conducting a Variable Gage Study
- Average and Range Method
- Graphical Analysis
- ANOVA Method

Analyzing Attribute Measurement Systems

- Attribute vs. Variable Measurements
- Cross Tab Method
- Signal Detection Method
- Workshop: Conducting an Attribute Gage Study
- Analytic Method