



MEASUREMENT SYSTEM ANALYSIS PRACTICAL TRAINING

OVERVIEW

Information on the product and process is gathered through measurement and inspection. This information is used to make decisions regarding the product and process. Hence, it is important to ensure that the data is accurate so that correct decisions are made, without which good parts may be rejected or non-conforming parts may be accepted. This is the purpose of clause 7.1.5.1.1 "Measurement System Analysis" in **IATF 16949**.

Measurement System Analysis (MSA) is a methodology to ensure that the organization's inspection, measuring and test equipment provide reliable measurement data. It determines how much the variation within the measurement process contributes to overall process variability. Having accurate and precise measurements improves process capability and ensures that improvement efforts are focused in the right direction.

OBJECTIVE

- To train the participants on the principles of Measurement System Analysis (MSA) to enable them to effectively conduct an Internal Audit on the Measurement Systems within the organization according to IATF 16949 Acceptance Criteria.

LEARNING OUTCOMES

- Upon completion of this program, participants should be able to:
 - Comprehend the suitability of Measurement System Analysis methods for different Measurement Systems and opportunities for improvement;
 - Identify and quantify the sources of measurement variation from the Measurement System with respect to the overall process variability;
 - Ask relevant and challenging open-ended questions about the Measurement System Analysis (MSA) to understand its effectiveness in making correct decisions;

WHO SHOULD ATTEND

Managers, supervisors, team leaders, audit teams and other executives responsible to ensure the accuracy of data used for analysis and who require an understanding of the implications of measurement error for decisions made about a product or process.

METHODOLOGY

This workshop utilises a combination of lectures, videos, practical exercises and, group discussions. It is an experiential learning program. A review of Measurement System Analysis samples conducted by the company can also be included, if available.

COURSE OUTLINE

9:00 am – 11:30 am - Module 1: Variation

- Effect of Variation on the Measurement System
- Measures of Variation
- Process Variation
- Measurement Error / Measurement System Variation
- Total Variation

11:30 am – 1:00 pm - Module 2: Sources of Measurement Error

- Equipment
 - Bias
 - Stability
 - Linearity
 - Resolution
- Process
- Parts
- Operator
- Environment

2:00 pm – 3:30 pm - Module 3: Measurement System Analysis (MSA)

- Purpose of MSA
- Effectiveness of the Measurement System
 - Repeatability
 - Reproducibility
 - Gage R&R
 - P/T ratio
 - Kappa
 - Decision Rules / Acceptance Criteria
- Accuracy and Precision

3:30 pm – 4:30 pm - Module 4: Attribute and Variable Gage R&R

- Methodology
- Example
- Exercise

4:30 pm – 5:00 pm - Module 5: Review

- Questions to Ask during Internal Audit
- Relationship between Process Capability and Measurement Capability
- Improving measurement capability

Contact:

Thomas Kuruvilla, Director & Six Sigma Black Belt

Thanjomi Training and Consultancy Sdn Bhd (1285988-T)

Mobile: 019-2829502

Email: Thomas@thanjomi.com