



## **MEASUREMENT SYSTEM ASSESSMENT (MSA)**

### **Introduction**

Organization frequently overlooks the impact of not having quality measurement systems. Good parts are wrongly rejected and bad parts are mistakenly accepted, or a satisfactory process appears unsatisfactory.

This can lead to lost sales and profits and unnecessary expense while trying to fix a manufacturing or business process where the primary source of variability is from the measurement system.

A capable measurement system will bring about an effective and efficient implementation of any process control program and improvement initiative as the actual variables of interest now lies directly with the processes itself.

### **Course Objectives**

This course will enable the participants to:

- understand the fundamental principle of measurement system and its effect and impact on the quality of measurement data and the accuracy of the process analysis
- know types of variations influencing the measurement system performance
- acquire the use of proven statistical techniques, skills and ability to assess the measurement system
- select the appropriate statistical methods for evaluating the measurement system in different environments

### **Course Outline**

#### **1 Introduction to Measurement System**

- 1.1 Metrology and Terminology
- 1.2 The Measurement Process and types of measurement errors
- 1.3 Statistical Properties of Measurement Systems
- 1.4 Understanding Standards and Use of Standards
- 1.5 Selecting and Developing Test Procedures

#### **2 Effects of Measurement System Variability**

- 2.1 Effect on Decisions
- 2.2 Effect on Product Decisions
- 2.3 Effect on Process Decisions
- 2.4 New Product Acceptance
- 2.5 New Process Acceptance
- 2.6 Process setup and control

#### **3 Types of Variation**

- 3.1 Source of Variations
- 3.2 Measurement Process Variation
- 3.3 Location Variation



- 3.4 Width Variation
- 3.5 Measurement System Variation
- 3.6 Calibration and Measurement System Analysis

#### **4 Assessing Measurement Systems**

- 4.1 Selecting and Developing Test Procedures
- 4.2 Preparation for a Measurement System Study
- 4.3 Acceptance Criteria

#### **5 Variable Measurement System Study**

- 5.1 Stability Study
- 5.2 Bias Study
- 5.3 Linearity Study
- 5.4 Repeatability and Reproducibility Study: Scatter Plot, Standard GR&R Study, ANOVA

#### **6 Attribute Measurement System Study**

- 6.1 Analytic Method

#### **7 Method for reducing unacceptable GR&R result**

##### **Who Should Attend**

This course is particularly suitable for and benefit to Engineers, Supervisors, Process Specialists or any personnel involve in process control and improvement activities.

##### **Pre-requisite**

Participants should have a basic knowledge of statistics

##### **Award of Certificate**

Certificate of successful completion will be issued to participants who have attended at least 75% of the course.

##### **Course Dates (9am – 5pm)**

Refer to our website.

##### **Course Fees**

**S\$ 440 (For SQI Member)**

**S\$ 490 (For Non-Member)**

*GST is not applicable. Price is inclusive of two tea breaks.*

(SDF funding available for SME Only – Application via [www.sdf.gov.sg](http://www.sdf.gov.sg))

**Course fees are subjected to change without prior notice.**

##### **Training Venue**

Training will be conducted in SQI, 66 Tannery Lane #06-07 Sindo Building S347805

**SQI INTERNATIONAL PTE LTD**

Providing Breakthrough Business Solutions



**For more information, please contact:**

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