



**Last date for registration 20 November 2024**

## INTRODUCTION

**Measurement System Analysis (MSA)** is a critical first step that should precede any data-based decision making. MSA is an experimental and mathematical method of determining how much the variation within the measurement process contributes to overall process variability. The purpose of MSA is to qualify a measurement system for use by quantifying its accuracy, precision, and stability.

This training program envelops the most essential spectrum of quality and measurement fundamentals and encompasses the supporting quality and Lean Tools used currently in the industries. This is followed with contemporary practices in MSA in industries.

## FOCUS AREAS

### Day 1:

- Introduction to Lean and Quality aspects.
- Descriptive Statistics, Inferential Statistics (Dispersion- Standard Deviation, Variance. Frequency distributions, Normal Distribution) calculations and applications. Variance for assembly.
- Sources of Variation & Need for MSA
- Measurement concepts- Accuracy, Precision, Bias, Linearity, Stability- Evaluation & Use.
- Gauge Repeatability and Reproducibility (**Gauge R & R**) concepts and Calculations.

### Day 2:

- Introduction to Advanced Product Quality Planning (**APQP**) and Production Part Approval Process (**PPAP**) approach and MSA need.
- Process Capability measurements - Cp, Cpk - & its relation with MSA
- Concept of Statistical Process Control (**SPC**)- X bar, R, P and C
- Statistical Tools- Inferential statistics- t test, z test, Regression
- MSA for attribute gauge
- Use of Minitab for MSA
- Case Situations, Problems

Quizzes, Game, Test.

## KEY TAKE AWAYS

**Upon completion of this course the participant will be able to:**

- Empower with fundamental Statistical literacy.
- Accumulate, organize the data and analyze for identifying the problem and getting the solution to the problem.
- Evaluate the variation and variability through Gauge R & R
- Streamline the production procedures and methodologies.
- Define the process capabilities.
- Familiarise to the Process control charts and its concepts.

## PARTICIPATION FEE

**Rs. 10450/-**  
+18% GST

**IMTMA Members/ Micro Companies/ Individuals/  
Educational Institutions / Students/ IMTMA Non  
Members/ Others**

**USD 415/-**  
**Overseas Participants**

**Group Concession : 10% for 3 to 5 and 20% for 6 and more delegates being nominated from the same company**

## PARTICIPANT PROFILE

The personnel in Design, Production, Quality, Testing labs, Observatories, Assembly and Service departments- The Managers, General Managers, Vice Presidents. Engineering & Science Faculties, Research Fellows, Students.

## FACULTY

**Er.Dhananjay M. Apte**- Licentiate Engineer. 1991 batch. M.E.(Mech.), Six Sigma MBB, Pune University topper-NMCT, Rewarding 30 Years Experience in Quality, Sales, Process. Projects in Industry & Education. Delivered 24,000 + Training Hours. Published Engineering & Management Articles, Books & Papers. Creator of Task Management- mini ERP software. Recipient of Shikshan Rattan Puraskar, Best Teacher Award (Times of India -Sept. 2004). Many rewarding feedback from Industries & Institutions including appreciations from Ms.Anu Aga ( Thermax ) , Mr.P.P.Chhabria ( Finolex ) and Dr.Vasantrao Gowarikar. High impact Trainer with 500 + google reviews scoring 4.8 points out of 5.0. And also a Panelist, Interviewer, Mentor, Curriculum Advisor, Guide, Socialist & Singer.

### For Registration Contact

**Nagraj Hamilpure**  
**Programme Coordinator**  
9881616902  
[n.hamilpure@imtma.in](mailto:n.hamilpure@imtma.in)  
**Back End Operations**  
9742626488  
[enquiry@imtmablr.com](mailto:enquiry@imtmablr.com)

### Contact Address

**INDIAN MACHINE TOOL MANUFACTURERS' ASSOCIATION**  
12/5, D-1 Block, MIDC, Chinchwad,  
Pune-411019  
Board Line : +91 7066030531 / 532



imtmatraining.67038796@hdfcbank

**REGISTRATION** : Prior registration for participation is necessary. Number of participants is limited and will be accepted on 'First Come First Serve' basis. A Certificate of participation will be issued to participants.

**Important Information** : Participation fee includes, course material, working lunch and tea / coffee. Interested companies are requested to register online by clicking on 'REGISTER' button and by filling up the nomination authority and participant's details in specified form.