Measurement Systems Analysis (MSA)

Introduction
Programme Overview
Measurement Systems Analysis (MSA) is a structured evaluation process that assesses the precision, accuracy, and stability of measurement systems used in manufacturing, testing, or data collection processes. It involves examining the equipment, procedures, and operators to ensure reliable and trustworthy measurements. Understanding MSA is crucial to guarantee the integrity and validity of collected data, minimizing errors and variations attributable to the measurement system itself. It enables organizations to make informed decisions and control their processes based on accurate and consistent data. This programme empowers individuals to identify and rectify measurement errors, optimize measurement processes, and consequently, improve overall process efficiency and product quality and reliability.

Audience
This training is practitioner level and suitable for anyone involved in facilitating or participating in MSA studies including Manufacturing Engineers, Quality Professionals and Continuous Improvement practitioners such as Lean Six Sigma belts.

No pre-requisites are required to attend the course although some level of basic numeracy is helpful to understand and interpret the results from the analysis.

Learning Outcomes
- Understand the essential concepts and principles of Measurement Systems Analysis (MSA).
- Understand the sources of variation in measurement systems accuracy, precision, and stability
- Be able to design, plan and facilitate an Measurement System study.
- Be able to conduct and interpret Gauge Repeatability and Reproducibility and Attribute Agreement Analysis studies for improvement insights.
- Where applicable, be able to apply advanced MSA methodologies to real-world scenarios such as destructive testing and application to CMMs.
- Be able to identify and rectify common measurement errors, optimizing processes for reliability.
- Develop skills in documenting MSA processes and integrating MSA within quality management systems.

These objectives aim to equip participants with a strong practitioner level understanding of MSA principles, practical application skills, error resolution techniques, and integration within quality management systems.

Adjustments can be made to align with specific industry requirements or participant backgrounds.

In Company Training

This programme is delivered in-company and can be tailored where required to align with industry or in-company standards and software.

The programme can be delivered on-site or virtually.

The sessions will be bespoke, lively and highly practical, delivering a memorable learning experience for the delegates. For in-company sessions we encourage working on your own live examples in the classroom exercises

We will discuss your objectives prior to the delivery, and help you to plan the most effective training and support to your team of delegates.

The practitioner training is 1 - 2 days, depending on the scope of methods required to be covered.

For international programmes we can start at any time. For example the format for virtual delivery can be a series of half-day sessions spread over one or more weeks.

Content
Introduction to MSA
- MSA Fundamentals: Core concepts, terminologies, and considerations
- Understanding sources of measurement system variation
- Understanding different measurement systems and their attributes
- Considerations when planning a study

MSA Techniques
- Techniques for evaluating accuracy, precision, and stability.
- Gauge R&R Studies: Conducting studies and interpreting results for improvement insights
- Attribute Agreement Analysis – conducing studies and interpreting results

Application and Practice
- Practical application of MSA concepts to simulated scenarios or case studies.
- Recognizing and addressing common measurement errors.
- Identify and rectify measurement errors for improved accuracy.

MSA Implementation
- Review of real-world application – review of how to apply MSA principles to participants' work scenarios or projects.
- Capturing and reporting MSA processes and outcomes effectively.
- Integration with Quality Management: Understanding MSA's role within broader quality systems.
- Action Planning: Summarize learnings and outline action plans for implementation.