

# Measurement Systems Analysis

Businesses need data to understand and communicate the true performance of their processes to enable process control, improvement and decision making. It follows that the measurement systems which produce the data must be reliable and can be shown to be reliable.

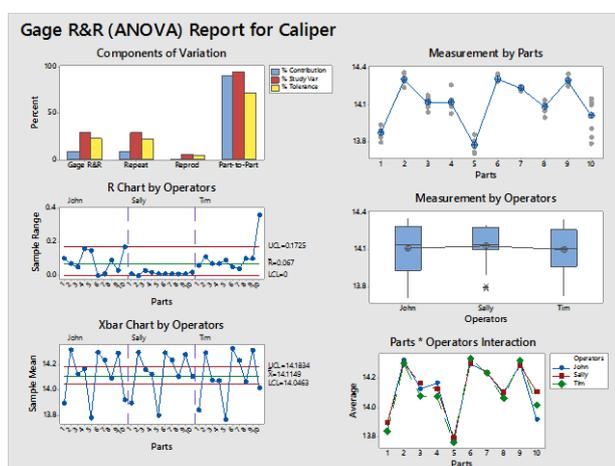
Unfortunately, there is no such thing as a perfect measurement system. Measurement Systems Analysis (MSA) is a family of techniques used to quantify measurement error and determine if it is small enough to be safely ignored. When this is not the case, a rich set of graphs and statistics are produced to allow the sources of the errors to be analysed. Often, improvements to the Measurement System can then be made to make it fit for purpose.

This one-day, Minitab based course teaches the techniques of Measurement Systems Analysis. It quickly moves from theory to practical hands-on exercises. Minitab data sets are provided.

Where possible, real studies can be carried out on the customer's production/lab measuring equipment.

## Who is the course for?

Scientists, engineers, technicians, process operators. The statistics are very light so anyone who uses measurement systems will be able to participate.



## Learning Outcomes

- You will understand the concepts and terminology of the measurement process
- You will be able to plan, carry out and analyse structured studies to assess the performance of a measurement system, determine if it is fit for purpose and if not be able to analyse the study data to determine the sources of error.

## Supporting Materials

Delegates receive printed and pdf copies of the training slides and 12 months access to the relevant content in our video library

## Course Contents

The exact content can be tailored to the customer. The main topics are:

- Characteristics of Measurements/Measurement Systems
- Effect of Measurement System Variability on Product and Process Decisions
- Gauge R&R Study
  - Planning and Running the Study

- Analysing the Data
- Interpretation of Results, Deciding if Adequate or Not
- Using Graphical Techniques to help Identify Areas for Improvement
- Gauge Bias and Linearity Study
- Assessing Gauge Stability
- GR&R Study for destructive testing
- MSA for Attribute Data - Attribute Agreement Analysis
- Exercise – GR&R Study and Bias/Linearity Study on Customer Measurement Systems

The course is hands-on from the outset so delegates will need to have at least the 30 day Minitab demo installed on their pc. If Minitab is not available, the course can be adapted to other statistical s/w. An excel based version of the course is possible.

### **Follow on courses**

- Statistical Process Control
- Process Capability Analysis
- Hypothesis Testing
- Regression Analysis
- Design of Experiments

*Catalyst offers Minitab statistical analysis training at introductory and advanced level in topics including Statistical Process Control, Capability Analysis (Cp/CpK), Hypothesis Testing, Regression Analysis, Measurement Systems Analysis, Design of Experiments.*