SQT

TRAINING THAT DEVELOPS
*REAL* CAPABILITY

# Measurement Systems Analysis

**CPI006**

## Measurement Systems Analysis

The calibration process, which is usually well operated in most organizations, does not provide all of the information required as to the health of the measurement process. The calibration activity, crucially, does not provide information on the variability in the measurement system. It is essential to know whether the variability of the measuring process is acceptable when compared to the underlying process variability. This information is provided through a Gauge R&R study. On this training course participants will learn how to use both the ANOVA and the Average and Range method.

The training course also covers Attribute Agreement Analysis, used to assess whether appraisers are consistent when inspecting for defects (attributes), with themselves, with one another, and with known standards.

## Duration & Price

Duration: 1 day
Delivery mode: This programme is available In-Company

## Dates & Locations

*In-Company training programmes are customised for your organisations specific needs. Most In-Company training is now delivered virtually.*

## In-Company Training

Please contact us for more information on our In-Company training options

## What's covered?

- Explanation of Measurement System terminology; bias, repeatability, reproducibility, stability, linearity, resolution, discrimination
- Carrying out a R&R (Repeatability and Reproducibility) study. Detailed step-by- step explanation of how to set up and undertake the study. Classroom exercise calculating and analysing the results of a R&R study using both the ANOVA and the Average and Range method. Plotting the results on the average and range chart to distinguish differences between the operators using the measuring instrument. Comparing the R&R to the process variation and to the specification limits. Explanation of the general rules of acceptability for R&R in a measuring system
- How to improve the performance of the measurement system when the R&R is excessive.
- Destructive Gauge R&R – calculation of the gauge R&R when the parts are destroyed during testing – differences between destructive and standard gauge R&R outcomes – the limitations of a destructive gauge R&R
- Attribute Agreement Analysis – used to assess whether appraisers are consistent when inspecting for defects (attributes), with themselves, with one another, and with known standards
- Demonstration of Minitab computer software used for analysing R&R studies and Attribute Agreement Analysis

## Who should participate?

- Staff from organisations registered to the ISO 9001 and ISO/TS 16949 standards
- Process engineers and technicians
- Quality engineers and technicians
- Quality control and quality assurance staff
- Staff involved in specifying and selecting measuring instruments and measurement systems.
- Staff involved in calibration
- Production management

## What will I learn?

Participants achieve the following learning outcomes from the programme;

- Design, plan, and undertake gauge R&R studies using Minitab software using ANOVA and the Average and Range method
- Compare statistics from the gauge R&R study against internationally accepted guidelines, and draw conclusions about the acceptability or unacceptability of the instrument under study
- Demonstrate understanding of Measurement Systems terminology including bias, linearity, stability, repeatability, reproducibility
- Design, plan, and undertake Attribute Agreement Analysis

## How do we train and support you?

**In-House Courses**

For In-House courses, the Tutor will contact the Course Organiser in advance to discuss the programme in more detail in order to tailor it specifically to the organisation.

**Course Manual**

Delegates will receive a very comprehensive course manual, which explains the terminology and methodology of measurement system analysis. The manual includes details of how to conduct a R&R (Repeatability and Reproducibility) study, with a worked example, and these detailed instructions could serve as the basis of a procedure for In-House use.

## What software do we use?

Minitab software will be used throughout the training course. Delegates will need to have Minitab versions 20, 21 or 22. 14 day trial version of Minitab 22 software is available on www.minitab.com

## Tutors

**Albert Plant**
View Profile

**Grainne Heneghan**
View Profile

## What Our Learners Say

We believe in excellence through transparency and continuous improvement. That's why we invite all our delegates to share their experiences on CourseCheck.com, an independent platform dedicated to genuine, unfiltered feedback. Learner insights help us not only to enhance our training programmes but also empower potential learners to make informed decisions. Click on the link below to read firsthand experiences and testimonials from past learners.

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