



## **GAUGE REPEATABILITY AND REPRODUCIBILITY STUDY (RANGE METHOD)**

The measurement result variation mainly comes from measuring equipment, operator and product. By performing GR&R study, it can be isolating these primary sources of variations and then can be better judged from the measurement result for the part (product).

GR&R study is used to:

- Identify the measurement processes that require improvement.
- Identify the source of measurement errors (observer or equipment), and
- Reduce the risks of wrong decision on the results of measurement.

### **LEARNING OBJECTIVE**

After seriously committed to this course, the trainee should be able to do the following:

- Understand the issues involved in repeatability and reproducibility (R&R) studies
- Learn how to estimate the repeatability and reproducibility in a measurement process
- Make a decision on the acceptance of the measurement system
- Avoid significant measurement error on product acceptance and on control charts and/or process capability studies.
- Provide criteria for accepting new measuring equipment.
- Comparisons between different measuring devices can be made more effectively.
- Evaluate deficient gages as opposed to incapable/out-of-control processes.
- Provide validity for statistical control and capability methods used in the process.
- Improve equipment maintenance, selection, calibration, and use.
- Improve observer's training and skill (as necessary).

### **TARGET GROUP**

Laboratory, production line and quality control personnel, anyone who must determine the accuracy and precision of gages, instruments and operators in a measurement process. It can serve as a refresher for experienced technicians; or it can be used in orientation for new hires.

\*Participants must have basic statistics knowledge, fundamental GR&R background, comfortable using a scientific calculator, simple algebra formulas and basic knowledge of MS Excel.

### **METHODOLOGY & LANGUAGE USE**

Training slides, Review Questions, Exercises, Case Study and Q&A. Test before & after Training.

Training Manual – English

Course deliver language – Can be mix of English, Bahasa Malaysia and Chinese

### **COURSE OUTLINE**

- Probability Distribution
- Introduction to Gauge R&R Studies
- Procedures for Performing a Gauge R&R Study
- Measurement Capability Indices
- Planning for the Gauge R&R Study
- Methods of Gauge R&R Studies
- Study of Unacceptable R&R results
- Conducting Gauge R&R Studies
- Reporting Gauge R&R Studies Result by using Microsoft Excel