



MEASUREMENT SYSTEM ANALYSIS (MSA)

1 NOVEMBER 12-13, 2025 (WEDNESDAY-THURSDAY)

8.45 AM – 5.00 PM  **FMM INSTITUTE, PERAK**



Many engineering decisions are only as good as the data / measurement on which they are based. This is why it is essential to make sure that measurement system, namely, gages / measurement equipment, appraisers, and methods, are consistent and fit for the purpose.

This course covers several methods of MSA and helps you to apply the most suitable method for your operation and to meet IATF-16949 requirements. Software is used to ease mathematical calculations, coupled with examples and simulation of MSA exercises.

...COURSE CONTENTS...

INTRODUCTION TO MSA METHODOLOGY

- Why do we measure things
- What is a measurement?
- What is MSA?
- The requirement of TS 16949
- Variation exists everywhere
- Theory of escaping defects
- Normal distribution properties
- Use of central limit theorem
- Control limit formulas
- The old philosophy of quality
- Measurement error
- Accuracy vs precision

SOURCE OF VARIANCE IN MEASUREMENT SYSTEM

- Repeatability
- Reproducibility
- Bias
- Stability
- Linearity

GR&R FOR VARIABLE DATA

- The common indices (%AV, %EV, %R&R)
- Different type of indices (%Study Var, %Tol, NDC)
- ANOVA method
- Average & Range method
- Graphical analysis
- Numerical analysis
- Determination of sample & trial size

ATTRIBUTE DATA AGREEMENT

- Similarities and differences from Variable GRR
- Kappa statistics vs P-Value approach

DESTRUCTIVE GR&R

- Cross method sampling arrangement
- Nested method sampling arrangement

ANALYSING BIAS, LINEARITY & STABILITY

- Steps for Bias study
- Steps for Linearity study
- Steps for Stability study

...OBJECTIVES...

To provide knowledge and skill to participants in the following areas:-

- Purpose of MSA in assessing quality of measurements
- Methodology used in MSA to evaluate accuracy and precision of variable data
- Methodology used in MSA to evaluation agreements in judging attribute data
- Methodology in MSA for bias, linearity and stability analysis

...WHO SHOULD ATTEND...

Engineers, Supervisors & Technicians (manufacturing & transactional)

...LEARNING OUTCOMES...

Participants shall be able to do the following upon completion of training:-

- Identify sources of errors in measurements,
- Master the technique of evaluating measurements,
- Do improvement on measurement practice based on GR&R assessment result,
- Coordinate GR&R assessment in real situation, and
- Evaluate and improve measurement method at his or her workplace.

...TRAINING METHODOLOGY...

Slides show | Video clip | Exercises / Examples | Simulation of GR&R exercise | Quizzes

...TRAINER...

ENCIK AZMAN BIN HUSSAIN received his Bachelor of Science in Electrical Engineering from the University of South Alabama, USA. He had his Six Sigma Black Belt from Sony Corporation, Japan; and his Green Belt from Air Academy, USA. He is now a certified Lean Sigma trainer for Rolls Royce – a giant company that produces aero-plane and marine engines. He also works with General Physics – training and consulting company based in the United States on project basis; where he serves Rolls Royce.

ENCIK AZMAN, a certified trainer register with PSMB, has solid manufacturing experience with Sony and Hicom Diecastings. He had held many challenging posts in manufacturing environment ranging from a Manager of an innovation unit, the Head of a subcon technical improvement team, the Head of Engineering Dept, and Chief Operation Officer. His prowess in innovative problem-solving has saved millions of dollars for his organization every year and made him one of the talented engineer in the organization. Some of Azman's work had been used in Sony Six Sigma training manual used through-out the world. His biggest contribution perhaps was his innovation in PCB pattern design, soldering process, and mounting process. These innovations were responsible for the million dollars saving and had left unchallenged for many years. He had won numerous awards during his service with Sony. Being a training consultant as well as a Lean Sigma practitioner, En Azman has developed training courses on Green Belt, DOE, SPC, MSA, FMEA, and Structured 5S to name a few. He has been teaching and coaching these topics since 2003 in public as well as in house.

~ Registration Form ~

MEASUREMENT SYSTEM ANALYSIS (MSA)

FMM Institute

No 1, Lorong Raja DiHilir, 30350 Ipoh, Perak

Fax: 05-5488221

Dear Sir / Madam, please register the following participant(s) for the above programme.

1.	Name		Designation	
			HP No	
	NRIC		Email	
2.	Name		Designation	
			HP No	
	NRIC		Email	
3.	Name		Designation	
			HP No	
	NRIC		Email	

(Please attach a separate list if space is insufficient)

We hereby confirmed that (Please tick (✓) in appropriate box):-

- ☐ We **will be claiming from HRD Corp** and full payment would made to FMM Institute in the event that no disbursement from HRD Corp under any circumstances
- ☐ We will **NOT BE CLAIMING from HRD Corp**. Enclosed cheque/bank draft No _____ for RM _____ being payment for _____ participant(s) made in favour of the "FMM Institute".

Submitted by:

Name:	Designation:		
Company:	Tel:	Fax:	
Address:			
Email:	FMM Membership No		

...COURSE DETAILS...

Date **November 12-13, 2025 (Wednesday-Thursday)**
Time **8.45am - 5.00pm**
Venue **FMM Institute Perak**
No 1, Lorong Raja DiHilir, 30350 Ipoh, Perak
Medium of Instruction **English**
CPD **14 hours**
Fees ☐ **Members RM1,134.00/pax**
☐ **Non-Members RM1,296.00/pax**
(Fees inclusive of Service Tax at 8%, Course Materials, Refreshment, Lunch and Certificate of Attendance)

...ADMINISTRATIVE DETAILS...

HRD CORP CLAIMABLE COURSE DETAILS

- Training Provider: **FMM Institute Perak** ■ MyCoID : **475427W_PERAK**
- HRD Corp Programme No: **Provided upon confirmation**

DISCLAIMER

The FMM Institute reserves the right to change the facilitator, date and to vary / cancel the course should unavoidable circumstances arise. All efforts will be taken to inform participants of the changes.

REGISTRATION

- Upon **Faxing/Mailing** the completed **Registration Form** to FMM Institute, you are **deemed** to have read and **accepted** the terms and conditions. The **course** would also be **deemed** as **confirmed** unless informed otherwise.
- Will be based on First-Come-First served basis.

PAYMENT

- Cheques** made in favour of "FMM Institute" should be forwarded to FMM Institute Perak.
- For **HRD Corp Claimable Course**, an **Attendance of 100% is a must**, in any case, **employers will be billed in full**.
- FMM Institute SST Registration No. **W10-1901-32000105**
- FMM Institute TIN No. **C10626805080**

CANCELLATION

Must be in Writing with Reasons ■ 7 days before the course – No payment charged ■ 3 – 6 days before the course - 50% payment charged ■ < 3 days before the course – Full payment charged ■ Participants who did not turn-up will be charged full payment ■ Replacements can be accepted at no additional cost

Closing Date:
NOVEMBER 5, 2025