

ONLINE TRAINING ON

## CERTIFIED SPECIALIST IN CORE TOOLS OF QUALITY – APQP, FMEA, MSA, SPC AND PPAP (AS PER IATF 16949:2016)



Date : 16\*, 20-21-22, 27-28-29 September, 11-12,13 October 2022 (34 Hours Online Training)  
Time : 1340 Hrs to 1700 Hrs (\*16 Sep - 0930 Hrs to 1700 Hrs)

### INTRODUCTION

In the highly competitive environments of Automotive / Manufacturing, most organizations are challenged with several simultaneous and equally complex goals:



Such goals demand that you raise your competence and knowledge in Quality Management techniques and establish your credibility to manage challenges with predictable assurance.

The Quality Core Tools are the building blocks of an effective quality management system. It is important to get an understanding of how the Core tools of quality work, learn the common language that connects all the tools and learn effective use of all the Core Tools of quality.

Organizations whose employees have mastered the Core Tool processes can assure their customers that the industry's most qualified individuals are working on their behalf, and that IATF 16949 and applicable quality reference manual requirements will be met without fail.

Keeping this in view, IMTMA is organising this program covering the 5 Core tools of quality.

**\*Note: Participants may consider either of the following options to register:**

<b>All Modules</b> 34 Hrs duration (16*, 20-21-22, 27-28-29 September, 11-12,13 October 2022)  Time: 1340 Hrs to 1700 Hrs (*16 Sep - 0930 Hrs to 1700 hrs)	<b>Module 1: Advanced Product Quality Planning (APQP) &amp; PPAP</b> (16* September & 13 October 2022)  Time: 1340 Hrs to 1700 Hrs (*16 Sep - 0930 Hrs to 1700 hrs)	<b>Module 2: Failure Mode and Effects Analysis (FMEA)</b> (20-21-22 September 2022)  Time: 1340 Hrs to 1700 Hrs	<b>Module 3: Measurement System Analysis (MSA)</b> (27,28,29 September 2022)  Time: 1340 Hrs to 1700 Hrs	<b>Module 4: Statistical Process Control (SPC)</b> (11-12 October 2022)  Time: 1340 Hrs to 1700 Hrs
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## FOCUS AREAS

**Advanced Product Quality Planning (APQP)** to define a process that creates a roadmap for developing new products complete with time-based milestones and decision points along the way.

- Fundamentals of APQP
- PDCA cycle in APQP
- Plan and Define Program (Phase 1)
- Product Design and Development (Phase 2)
- Process Design and Development (Phase 3)
- Product and Process Validation (Phase 4)
- Feedback, Assessment & Corrective Action (Phase 5)
- Control Plan Methodology
- Assignment No. 1 on preparing APQP document

**Failure Mode and Effects Analysis (FMEA)** a core tool that enables identifying potential failure modes, assesses the risk of those failure modes and establishes action priorities to mitigate the highest priority risks.

- Introduction to FMEA Concepts and to new AIAG & VDA Hand book for FMEA
- Reliability
- Failure analysis vs FMEA
- Cause & Effects Analysis
- FMEA Methodology
- Design FMEA – Examples & Case Studies and changes as per AIAG & VDA handbook
- Process FMEA – Examples & Case Studies and changes as per AIAG & VDA handbook
- Group Exercises (Participants will be divided into groups and each group will prepare and study an example of FMEA)
- Developments & Benefits of FMEA
- Using FMEA for Risk assessment
- Assignment No. 2 on preparing FMEA

# APQP FMEA MSA SPC PPAP

**Measurement System Analysis (MSA)** a critical core tool, guides you in selection of appropriate measurement equipment in order to meet productive quality requirement.

- Review of terms - Accuracy, Precision, Bias, Measurement Uncertainty, etc.
- Difference between calibration and MSA components of a measurement system
- Study of R&R - Range method and ANOVA method
- Relation between MSA and SPC methods
- Gauge performance for attribute measurements
- Measurement study preparation
- Acceptance criteria
- Case studies and examples of MSA for specific components
- Sample exercises for calculations of R&R and plotting SPC charts
- Assignment No. 3 on Gage R&R study

**Statistical Process Control (SPC)** gives operators a tool to monitor stable processes and to identify when the process is going out of control due to special causes so that problems can be addressed before product quality is affected.

- Hidden cost of Quality
- Understanding of common and special causes
- QC Tools
  - Run chart
  - Mean & Range chart
  - Histogram
- Machine and process capability
- Application of control charts for variables
- Application of control charts for attributes
- Analysis of control charts
- Assignment No. 4 on SPC

**Production Part Approval Process (PPAP)** provides a formal, standardized framework for customer-supplier communications regarding the specification and quality requirements for products, parts and materials.

- Overview of PPAP
- Importance of PPAP & when to do?
- PPAP requirement details
- Levels of submission & Customer approval

## CORE TOOLS OF QUALITY - AS PER IATF 16949:2016



## KEY TAKE AWAYS

- Gain a basic understanding of the Core Tools used in New Product Development as well as for ongoing process control for existing products.
- Focus on New product Development Assurance through APQP and PPAP
- Understand the importance and necessity of APQP & PPAP to meet customer requirements
- Focus on the use of Process Management to achieve standardization and improvement using Process Flow
- Take part in FMEA reviews in your organization and contribute in CFT meetings
- Conduct SPC & MSA studies and interpret results.
- Participate in FMEA discussions
- Add value in Production/Manufacturing Services through effective implementation of the core tools

## TRAINING METHODOLOGY

**Learning by doing approach:** The entire program is divided into 5 sessions (Total 34 hours) on Core tools. Sessions are staggered over weeks to give inputs in stages along with assignments

- **Session 1:** Advanced Product Quality Planning (APQP) :16th September 22, (Full Day)  
Total 6 hours
- **Session 2:** Failure Mode and Effects Analysis (FMEA) 3 hours each on 20,21,22 September 22,  
Total 9 hours
- **Session 3:** Measurement System Analysis (MSA), 3 hours each on 27,28,29 September 22, Total 9 hours
- **Session 4:** Statistical Process Control (SPC), 3 hours each on 11,12 October 22, Total 6 hours
- **Session 5:** Production Part Approval Process (PPAP) 13 October 22, 4 hours
- Quiz question sets in every session to ensure participants have understood the topics.
- Assignments after each session (4 sets of assignments) to ensure participants not only learn the theory, examples, case studies during training but also become competent to practice by themselves.
- Participants to complete the assignments and submit before the next session
- Review of assignments for corrections / improvement
- Final test and Assessment
- Certification issued after completion of assignments and final test
- Soft copies of Training Material and Case studies will be given after the training.
- The program is designed to ensure participants can effectively learn and implement Core Tools of Quality in their own projects in the industry.

## PARTICIPANT PROFILE

This course is ideal for those who are responsible for product development, operations management, quality control, and engineering including department managers, supervisors, quality representatives, engineers and administrative staff who have a focus on business improvement, performance and profitability.

## FACULTY

This programme will be conducted by **Mr. M. C. Ramakrishnan**, Former Vice President -Quality, Bosch Limited & **Mr. Gautam Doshi**, Advisor, IMTMA.



**Mr. M. C. Ramakrishnan** is an industry expert with over 40 years of experience in the field of quality tools like Six Sigma, SPC, MSA, Poka - Yoke etc. He is a trained ISO 9001 and TS 16949 auditor, trained six sigma black belt as well as an FMEA moderator. He has championed a number of Quality Improvement projects at Bosch. He was associated in Bosch's campaign and pursuit for 5S, Poka Yoke, SPC, MSA & TPM initiatives.

**Mr. Gautam Doshi** is a B.Tech. (Mech) from IIT, Powai and an industry expert with over 35 years of experience in Machine Tool and Automotive industry. He has conducted several training programmes, seminars & workshops on machine tool related subjects. He is a consultant to reputed companies in the area of Productivity and Quality improvement and Adviser to many companies manufacturing automotive components and Dies & Moulds. Mr. Doshi is former Vice President & Technical Director, PMT Machine Tool Automatics Ltd., Pune and has also served in Tata Motors for over 5 years. He is the author of several IMTMA publications such as 'First Time CNC', Guidelines on Process Capability to name a few.



## PARTICIPATION FEE

All Modules	Module 1	Module 2	Module 3	Module 4
₹ 22,500/-	₹ 9,000/-	₹ 9,000/-	₹ 9,000/-	₹ 5,500/-
+ 18% GST	+ 18% GST	+ 18% GST	+ 18% GST	+ 18% GST
\$ 900	\$ 360	\$ 360	\$ 360	\$ 220

## FOR MORE DETAILS CONTACT

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