



Industry Forum

Aerospace Management System Tools Training and Implementation Programmes

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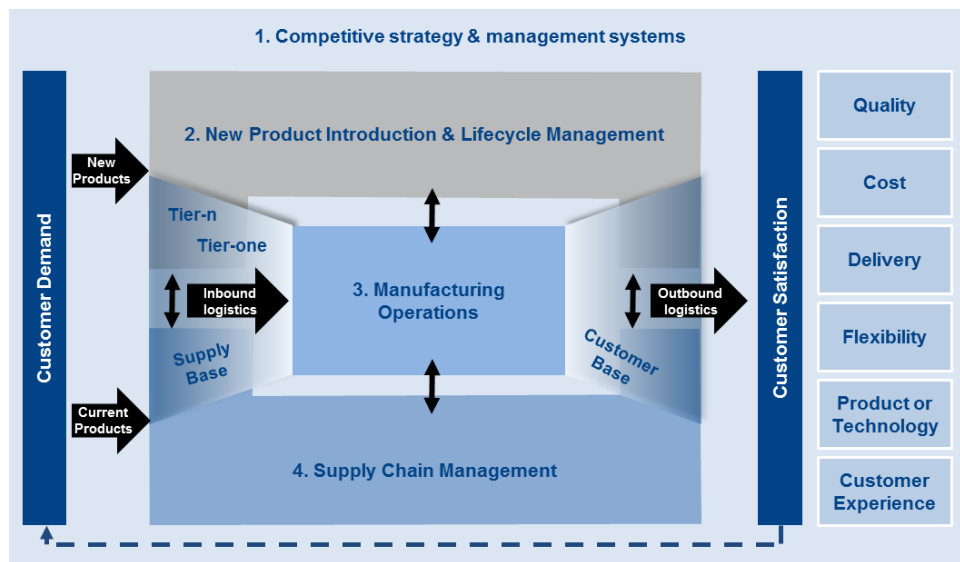
Why choose Industry Forum?

Industry Forum helps major global manufacturers understand, optimise and improve both manufacturing capability and business performance.

An integrated team of consultants and practitioners – all seasoned expert engineers with multi-sector manufacturing experience – Industry Forum brings together a world-class combination of improvement competency, insight, process and best practice.

Spanning automotive, aerospace, consumer appliance, electronics and food sectors, for over 20 years Industry Forum has planned and delivered some of the world's most consistent and successful transformations for business-critical manufacturing operations.

Industry Forum provides companies with support across their organisation enabling them to drive improvement across all the capability areas that in combination deliver the outputs required to satisfy customers and drive competitiveness.



This breadth of knowledge ensures that we are able to guide organisations to integrate the right tools across their operations for business benefit. Our approach provides course delegates and activity team members with the understanding and confidence to successfully implement their knowledge, working with colleagues for mutual success.

Industry Forum experience

Industry Forum has over 15 years of direct experience delivering management systems core tools improvement training and consultancy activities including:

- Responsibility for training 3rd party automotive certification body auditors on behalf of the UK IATF oversight office
- A leading international provider of management systems training across the automotive, aerospace and wind energy sectors
- Since 2012 Industry Forum has worked with Rolls-Royce to develop and deliver their Product Part Approval Process training programme with global responsibility for training and approving both staff and supplier personnel.

Our trainers are expert practitioners in Aerospace Management Systems with hands-on industrial experience and highly developed communication skills. They have a wealth of technical expertise and often provide on-site advice and coaching. During every course we will encourage collaboration and sharing of practical experiences, ensuring learning can be put into context, empowering delegates to apply their new skills successfully in their workplace, as well as making sustainable improvements.

Aerospace Standards (AS) courses development

The drive to provide standard, consistent approaches to meeting quality requirements in the aerospace sector has been led by the Aerospace Engine Supplier Quality (AESQ) strategy group. The AESQ members have led the collaborative development of a series of Aerospace Standards (AS) covering a range of themes associated with driving robust new product and process introduction as well as supporting zero defect manufacture.

The AS9145 Requirements for Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) standard has provided a sector wide approach to product development, providing demonstration that manufacturing processes have the capability to produce parts that satisfy customer requirements, at the required rate. Demonstrated alignment of organisational processes to the AS9145 standard is expected to be increasingly mandated in the future. In addition to supporting a robust new product development process, many of the AS9145 required elements are equally applicable in the drive towards zero defect manufacturing in existing production.

Industry Forum has created a series of courses designed to provide Essentials (understanding) or Practitioner (application) levels of capability against the AS group of standards.

- Our Essentials courses are designed for leaders who will be responsible for providing resource and direction in the implementation of the tools as well as staff who will need to have an understanding but will not be responsible for application.
- Our Practitioner courses are designed for staff who will be responsible for leading or actively participating in the implementation of the tools. They need to have practical understanding not just of the implementation but how to achieve the right result and the expected depth to which the tool should be applied.

Delivery Structure

Each course has been designed to provide delegates with multiple learning styles whilst covering the requirements of the AS standards:

Essentials Courses

- Principles are introduced through structured presentations
- Real world application is reinforced through case study examples
- Understanding is reinforced through small group discussions with feedback sessions

Practitioner Courses

- Principles are introduced through structured presentations
- Understanding is reinforced through small group discussions with feedback sessions
- Real world application is reinforced through case study examples
- Technical activities and calculations are experienced using a supporting workbook
- Delegates individually review the documentation currently used by their organisation
- Thinking is developed through reflective activities
- Learners are encouraged to share appropriate experiences in discussion

Recognition

On completion of Practitioner courses, learners will receive an electronic format, uniquely numbered, certificate of attendance. Industry Forum maintains certificate records enabling future confirmation of training completion if required to support audit processes.

Certificates of attendance will also be provided for Essentials courses on request.

Aerospace (AS) Standards Endorsed courses

Industry Forum has worked in collaboration with Rolls-Royce and the wider aerospace sector during the development of a number of our courses.

These courses have been endorsed by Rolls-Royce and also approved, by the AESQ through their website:

- AS13004 – PFMEA and Control Plan Practitioner for Aerospace (2 day)
- AS13003 – MSA Practitioner for Aerospace (2 day)
- AS13000 – 8D Problem Solving (2 days)

The following course has been endorsed by Rolls-Royce:

- AS13006 – Process Control Methods Practitioner for Aerospace (2 day)

Aerospace (AS) Standards courses list

The following standard Industry Forum courses are also currently available to support organisations:

- AS9145 APQP and PPAP Essentials (2 days)
- AS9145 APQP and PPAP Practitioner (5 days)
- AS9145 – APQP Essentials for Aerospace (1 day)
- AS9145 – PPAP Essentials for Aerospace (1 day)
- AS13004 – Design and Process FMEA Essentials for Aerospace (1 day)
- AS13004 – PFMEA and Control Plan Essentials for Aerospace (1 day)
- AS13004 – PFMEA and Control Plan Practitioner for Aerospace (2 day)
- AS13003 – MSA Essentials for Aerospace (1 day)
- AS13003 – MSA Practitioner for Aerospace (2 day)
- AS9103 – SPC Essentials for Aerospace (1 day)
- AS13000 – 8D Problem Solving (2 days)

Industry Forum is also able to provide bespoke training programmes to best match clients individual needs. These will normally combine standard course content with practical application activities, working with the clients own documentation and developing processes that drive effective implementation.

The AS13000 course includes an end of course examination as required by the standard. Delegates who pass this test will receive a certificate that documents their achievement.

Aerospace (AS) Standards implementation support

Industry Forum recognises that some organisations will already have similar techniques in place whilst others may require additional support beyond the training phase to implement and embed the approaches. We work with companies to provide bespoke support programmes to fully implement the tools in an integrated manner. These include:

- Gap analysis of current processes vs AS standards and additional customer requirements
- Integration within and development of gated New Product Introduction processes
- Coaching support to the practitioners responsible for implementation and dissemination
- Leadership mentoring and development of their internal audit approach to ensure effectiveness

AS9145 APQP and PPAP Practitioner for Aerospace



5 day course

Course Overview

This 5 day AS9145 Practitioner course will provide all delegates with an in-depth understanding at practitioner level of the AS9145 standard – which provides the framework for the introduction of new products across the Aerospace and Defence sectors. The standard aims to embed APQP and PPAP best practice within an organisation's New Product Introduction process.

Who should attend?

This course is for Senior Managers, Management Representatives, Implementation Teams, Internal Auditors and others who are involved in the auditing or implementation of Advanced Quality Planning (AQP) activities, including Control Plans.

Benefits and Learning Objectives

Advanced Product Quality Planning (APQP) is used to support the introduction of new products and processes as well as managing changes to existing products and processes. Companies that apply Advanced Product Quality Planning (APQP) gain improved efficiencies and reduced costs in new product and new process introductions, with lower product defects and better on time delivery performance.

Companies that apply Production Part Approval Process (PPAP) as the culmination of Advanced Product Quality Planning (APQP), gain greater customer confidence in their ability to introduce new products and processes or make changes to existing products and processes.

This course will provide all delegates with an in-depth understanding of the advantages and expected benefits of using the APQP and PPAP processes from planning, product design and development through to process design, validation and on-going production.

Core Themes covered

- Understand the Aerospace Advanced Product Quality Planning Process (APQP)
- Understand at Practitioner level the 5 phases of APQP
 - Planning
 - Product Design and Development
 - Process Design and Development
 - Product and Process Validation
 - On-going Production, Use and Post-delivery service
- Understand the requirements and implementation of the Key APQP outputs
 - Design Records
 - Design Risk Analysis (Design Failure Modes and Effects Analysis DFMEA)
 - Process Flow Diagram
 - Process Failure Modes and Effects Analysis (PFMEA)
 - Control Plan
 - Measurement Systems Analysis (MSA)
 - Initial Process Capability Studies
 - Packaging, Preservation and labelling Approvals
 - First Article Inspection
 - Customer PPAP Requirements
 - PPAP Approval form
- Understand the Aerospace Production Part Approval Process (PPAP)
- Understand the correct use of the PPAP Approval Form
- Understand PPAP disposition and resulting actions
- End of course exam underwritten by the SMMT IATF Oversight Office

AS13003 MSA Practitioner for Aerospace



2 day course

Endorsed Course

Course Overview

This course covers the requirements for AS13003 – Measurement System Analysis (MSA) for the Aero Engine supply chain and outlines the competitive advantages of an effective Measurement System Analysis (MSA) process, along with the benefits of reduced costs due to poor measurement.

MSA provides a method enabling organisations to understand the variation present in their measuring systems. This variation can impact both variable and attribute measurement systems. A high level of confidence is required for the measurement of product and process characteristics. Implementation of an effective MSA process forms one of the key foundation activities in support of this goal.

Who should attend?

This course is designed for Process Design Practitioners, Process Improvement Teams, Implementation Teams, Internal Auditors and others involved in the implementation or auditing of Measurement Systems Analysis.

Benefits and Learning Objectives

MSA is used when an understanding of measurement system variability is required. MSA studies will decompose measurement system variability into equipment, operator and part variation. It is often mandated by aerospace and other engineering primary manufacturers as a specific requirement on their suppliers to give them confidence in the measurements that are being taken and reported by the supplier.

MSA will support understanding measurement system performance and allow any performance limitations to be actioned appropriately by the organisation.

Delegates will become competent in implementing, undertaking and auditing MSA including studies for variable and attribute data.

Implementation of MSA will support improved customer satisfaction, reduced cost of quality and improved problem solving robustness.

Core Themes covered

- System for defect prevention
- Purpose of Measurement System Analysis (MSA)
- Requirements from AS13003 and AS9145
- Linkages to zero defects
- Data types
- Choosing measurement system analysis types
- Calibration vs MSA
- Understanding variation and resolution
- Sample selection, sample numbers
- Within part variation
- Fixtures and flexible components
- Appraiser selection
- Accuracy, bias, linearity, stability and precision
- Repeatability and reproducibility
- Study approaches - Variable and Range
- Factors driving measurement
- Average and range study (tolerance study)
- Acceptance criteria (TOL study)
- Mitigation for poor results
- Gauge study relationships
- Resolution checking and accuracy ratio
- Feature categories
- Resolution and accuracy acceptance criteria
- Number of distinct categories (NDC)
- When MSA should be applied and pre-requisites
- Study planning and training
- Environmental impacts
- Average and range study (total variation)
- Understanding variation sources (EV, AV and PV)
- Analysis of results and Mitigation strategies
- Acceptance criteria (TV study)
- Gauge study relationships
- Anova study
- Limitations of measurement
- Statistical software
- Benefits of graphical representation
- Nested studies (destructive testing – non repeatable)
- MSA read across
- Gauge R&R for co-ordinate measuring machines (CMM)
- CMM programme verification
- Attribute studies
- Visual inspection
- Attribute Agreement Analysis - Kappa study
- Acceptance criteria (Kappa study)
- Gauge performance curves

AS13004 Process FMEA and Control Plan Practitioner for Aerospace



2 day course

Endorsed Course

Course Overview

This course covers PFMEA and Control Plan requirements for AS13004 – Process Failure Modes and Effects Analysis and Control Plan (including an overview of DFMEA). This course outlines the competitive advantages of an effective FMEA process along with the benefits of value added controls within the control plan.

FMEA is an analytical method to ensure potential problems have been considered, assessed for risk and actioned as part of product and process design. It provides a record of an organisations collective knowledge about its products and processes. The intent of the control plan is to document and provide value added controls in support of the PFMEA process. Implementation of an effective PFMEA and control plan process form key foundation activities in support of the zero defect goal.

Who should attend?

This course is designed for Process Design Practitioners, Process Improvement Teams, Implementation Teams, Internal Auditors and others involved in the implementation or auditing of Process Failure Modes and Effects Analysis and Control Plans.

Benefits and Learning Objectives

FMEA is used to support the introduction of new products and processes as well as supporting changes to existing products and processes. It supports the goal of zero defects, defect prevention and the reduction of variation and waste. Companies that apply PFMEA and Control Plans will see improved product conformity, better delivery performance and reduced cost of non-quality.

Delegates will become competent in understanding the requirements of DFMEA and creating and analysing Process FMEA's / Control Plans at 'Practitioner' level and will develop the capability to apply the methods to implement Failure Mode and Effects Analysis and Control Plans within their organisation.

Core Themes covered

FMEA General

- System of defect prevention tools
- Purpose and history of FMEA
- Introduction to, scope of AS13004
- Risk and types of risk management
- FMEA considerations and application
- Cross functional teams
- Define the customer
- FMEA steps and recommended actions
- FMEA pitfalls
- FMEA types

Design FMEA

- Design FMEA thinking
- Start points – boundary diagram
- Function, failure modes, effects
- Classification, causes and prevention
- Key characteristics and critical characteristics
- Severity, occurrence, detection and RPN
- Detection and mistake proofing
- Recommended actions and review

Process FMEA

- AS13004 Requirements for PFMEA
- Process FMEA start points
- Process flow diagram scope and levels of detail

Process FMEA

- PFMEA essentials
- PFMEA operation, function, failure mode and effect
- Causes, prevention, value added prevention
- Process mistake proofing
- PFMEA severity, occurrence, detection and RPN
- Recommended actions and review
- Different PFMEA types – e.g. assembly
- Different approaches to creating and maintaining PFMEA
- Part specific PFMEA and data duplication
- Creating a reference PFMEA
- Creating a part specific PFMEA – finite failure modes
- PFMEA Review

Control Plan

- Purpose, overview, AS13004 requirements
- Control plan phases and linkages
- Process flow diagram and the control plan
- PFMEA prevention and detection overview and controls
- Control plan structure and depth
- Control plan development approach
- Product and process characteristics
- Classification, requirements, evaluation and sample size
- Reaction planning and control plan review

AS13000 8D Problem Solving for Aerospace



2 day course

Endorsed Course

Course Overview

This course covers the training syllabus requirements of AS13000 – Problem Solving Requirements for Suppliers. The AS13000 standard mandates the use of the Eight Disciplines (8D) approach to structured problem solving to provide a repeatable structured approach irrespective of customer.

The 8D approach provides organisations with a step by step approach to problem solving activities

D0 – Implement Immediate Containment and Prepare for 8D

D1 – Form the Team

D2 – Define the Problem

D3 – Develop Containment Actions

D4 – Identify and Verify Root Causes

D5 – Identify Corrective Action

D6 – Implement Corrective Actions

D7 – Define and Plan Preventive Action

D8 – Recognise the Team

Following a robust problem solving approach is critical to ensure that root causes are correctly identified and eliminated to prevent future occurrence of repeat issues. The AS13000 standard requires that suppliers use the 8D process to respond to a customer request for corrective and preventive action.

Who should attend?

The AS13000 standard states that “The correct training of 8D practitioners is key to the successful outcome of the process. Each supplier shall employ or have access to a problem solving practitioner who has been trained by a training provider meeting the requirement of the training syllabus”.

The course is primarily aimed at those who will lead supplier 8D problem solving activities.

Benefits and Learning Objectives

The 8D problem solving approach can be applied to a wide variety of issues – quality, equipment downtime, process audit failure etc. The robust application of 8D problem solving will support:

- Improved customer performance – quality and delivery
- Reduced costs of non-performance
- Improved process adherence and efficiency

Core Themes covered

- AS13000 introduction and requirements
- Problem solving overview
- Root causes vs firefighting
- Problem detection
- Problem solving and standard work
- 8D steps overview
- Communication and listening
- D0 – Immediate containment, escape points
- D1 – Form the team, effective team-working
- Stakeholder management in problem solving
- D2 – Define the problem
- Data collection and analysis tools
- Is/ Is Not analysis, functional analysis
- D3 – Develop containment actions
- D4 – Identify and verify root cause(s)
- Brainstorming, cause and effect analysis, 5 Why, Fault tree analysis
- D5 – Identify corrective actions
- Human factors and mistake proofing
- Visual management and standard work
- D6 – Implement corrective actions
- Management of change overview principles
- Verification techniques and control plan linkage
- D7 – Define and plan preventative actions
- Problem solving and FMEA alignment
- D8 – Recognise the team
- Documentation for problem solving
- End of course examination

AS13006 Process Control Methods Practitioner for Aerospace



2 day course

Endorsed Course

Course Overview

This course covers Process Control requirements for AS13006 – Process Control Methods. This course outlines the competitive advantages of effective process control strategies along with the benefits of value added controls within the control plan.

Process control concerns the mechanisms by which the output of a specific process is maintained within a desired range to ensure the resultant characteristic meets the requirements. This course introduces Statistical Process Control (SPC) from the basics, to creating charts by hand, to using more advanced methods to monitor and improve process control.

Who should attend?

This course is designed for Process Design Practitioners, Process Improvement Teams, Implementation Teams, Internal Auditors and others involved in the implementation or auditing of Process Control strategies and techniques. Familiarity with basic statistical concepts would be beneficial.

Benefits and Learning Objectives

The use of statistical techniques and other proven methods will result in improved quality and manufacturing maturity. The AS13006 standard helps organizations select the appropriate control strategies when developing Control Plans and demonstrate their effectiveness through statistical analysis. It supports the goal of zero defects, defect prevention and the reduction of variation and waste.

Delegates will become competent in the use of SPC control charts for continuous and attribute data. How to calculate and interpret the results of capability studies, whilst identifying potential issues. Understand the linkage of the process controls with other quality tools: Process Failure Mode Effects Analysis, Control Plans, and Measurement System Analysis.

Topics covered

The Importance of Process Control

- Examples and discussion on process control failures
- Reputational impact
- Effect on the Aerospace industry
- Benefits of achieving design nominal
- Closed loop control system
- Effectiveness of in process control over end of line inspection

Process Control in Context of Quality Planning

- Linkage to PFMEA and Control Plans
- Purpose and content of Control Plan

Selection of Process Control Methods

- Basic overview and explanation of the various control methods

Data Collection

- Importance of time sequence
- Importance of reliable measurement systems
- Importance of non-biased data and operational definition for data collection
- Sample size considerations

Process Capability Analysis

- Basic statistical terms
- Process stability assessment using control charts

Process Capability Analysis

- Tests for Special Causes
- Process Capability assessment (Cp, Cpk, Pp, Ppk) Incorrect assumptions about Cpk
- Process Capability prerequisites
- Handling non-normal data
- Statistical software

Basic Root Cause Analysis and Process Improvement

- Appropriate reaction to special causes of variation vs common cause variation
- Options for confirmation of change effectiveness

Application of Control Charts

- I-MR
- Rational Subgrouping
- X-Bar / & R Chart
- I-MR-R/S – Between / within (3 way chart)
- Attribute charts (P, C, NP & U)
- Charts for rare events
- Pre-Control Charts

Error Proofing

- Error proofing principles, devices and strategies
- Levels of error proofing
- Automated Control systems

AS9145 APQP and PPAP Essentials for Aerospace



2 day course

Course Overview

This 2 day AS9145 APQP and PPAP Essentials course will provide all attendees with an awareness of the AS9145 standard, which provides the framework for the introduction of new products across the Aerospace and Defence sectors. The standard aims to embed APQP and PPAP best practice within an organisation's New Product Introduction process.

Who should attend?

Senior Managers, Management Representatives, Implementation Teams, Internal Auditors and others who are need to understand the approach to Advanced Quality Planning (AQP) activities, but who will not be directly involved in implementation.

Benefits and Learning Objectives

Advanced Product Quality Planning (APQP) is used to support the introduction of new products and processes as well as managing changes to existing products and processes. Companies that apply Advanced Product Quality Planning gain improved efficiencies and reduced costs in new product and new process introductions, with lower product defects and better on time delivery performance.

Companies that apply Production Part Approval Process (PPAP) as the culmination of Advanced Product Quality Planning (APQP), gain greater customer confidence in their ability to introduce new products and processes or make changes to existing products and processes.

This course will provide all delegates with an awareness of the advantages and expected benefits of using the APQP and PPAP processes from planning, product design and development through to process design, validation and on-going production.

Topics covered

- Understand the Aerospace Advanced Product Quality Planning Process (APQP)
- Understand the 5 phases of APQP
- Understand the concept of Customer Specific Requirements
- Understand the Aerospace Production Part Approval Process (PPAP)
- Understand the PPAP Approval form
- Understand PPAP disposition and resulting actions

AS9145 APQP Essentials for Aerospace



1 day course

Course Overview

This 1 day AS9145 APQP Essentials course will provide all attendees with an awareness of the Advanced Product Quality Planning Elements of the AS9145 standard (which provides the framework for the introduction of new products across the Aerospace and Defence sectors). The standard aims to embed APQP and PPAP best practice within an organisation's New Product Introduction process.

Who should attend?

Senior Managers, Management Representatives, Implementation Teams, Internal Auditors and others who are need to understand the approach to Advanced Product Quality Planning (AQP), but who will not be directly involved in implementation.

Benefits and Learning Objectives

Advanced Product Quality Planning (APQP) is used to support the introduction of new products and processes as well as managing changes to existing products and processes. Companies that apply Advanced Product Quality Planning gain improved efficiencies and reduced costs in new product and new process introductions, with lower product defects and better on time delivery performance.

This course will provide all delegates with an awareness of the advantages and expected benefits of using the APQP processes from planning, product design and development through to process design, validation and on-going production.

Topics covered

- Understand the Aerospace Advanced Product Quality Planning Process (APQP)
- Understand the 5 phases of APQP
- Understand Key APQP outputs

AS9145 PPAP Essentials for Aerospace



1 day course

Course Overview

This 1 day AS9145 PPAP Essentials course will provide all attendees with an awareness of the Production Part Approval Process (PPAP) Elements of the AS9145 standard (which provides the framework for the introduction of new products across the Aerospace and Defence sectors). The standard aims to embed APQP and PPAP best practice within an organisation's New Product Introduction process.

Who should attend?

Senior Managers, Management Representatives, Implementation Teams, Internal Auditors and others who are need to understand the approach to Advanced Product Quality Planning (APQP), but who will not be directly involved in implementation.

Benefits and Learning Objectives

Companies that apply Production Part Approval Process (PPAP) as the culmination of Advanced Product Quality Planning (APQP), gain greater customer confidence in their ability to introduce new products and processes or make changes to existing products and processes.

This course will provide all delegates with an awareness of the advantages and expected benefits of using the PPAP processes to support product and process validation and on-going production.

Topics covered

- Understand the Aerospace Production Part Approval Process (PPAP)
- Understand the PPAP Approval form
- Understand PPAP disposition and resulting actions

AS13004 Design and Process FMEA Essentials for Aerospace



1 day course

Course Overview

Failure Modes and Effects Analysis (FMEA), is an analytical method to ensure potential problems have been considered, assessed for risk and actioned as part of both product and process design. It provides a record of an organisations collective knowledge about products and processes.

It is important that the inter-relationship between Design and Process FMEA activities is understood with an integrated deployment approach to ensure risks are identified and reviewed appropriately.

This one day course provides an awareness of the FMEA requirements for AS9145 – Advanced Product Quality Planning and Production Part Approval Process.

Who should attend?

This course is designed for leaders and team members who need to understand the principles of FMEA but who will not be leading application. It will be suitable for leaders who need to provide resource and drive engagement with the process as well as staff who may be asked to contribute to the process. Staff members who need to lead FMEA activities should attend the two day Practitioner course.

Benefits and Learning Objectives

FMEA is used to support the introduction of new products and processes as well as supporting changes to existing products and processes. It is often mandated by aerospace and other engineering primary manufacturers as a specific requirement to support the goal of defect prevention and the reduction of variation and waste. Companies that apply FMEA successfully, see improved product conformity, better on time delivery performance and a reduction in the cost of non-quality.

Delegates will become competent to participate in Design and Process FMEA's and will develop an understanding of the methods to implement Failure Mode and Effects Analysis within their organisation.

Topics covered

- Overview of the FMEA process
- General review of FMEA principles
- Design FMEA – including start points
- Process FMEA – including start points
- FMEA ranking tables and scoring
- Key characteristics and critical issues identification

AS13004 Process FMEA and Control Plan Essentials for Aerospace



1 day course

Course Overview

Process Failure Modes and Effects Analysis (PFMEA), is an analytical method to ensure potential problems have been considered, assessed for risk and actioned as part of both product and process design. It provides a record of an organisations collective knowledge about products and processes. A documented description linking manufacturing process steps to key inspection and control activities.

The intent of a Control Plan is to control the design characteristics and the process variables to ensure product quality. This course covers the PFMEA and Control Plan requirements for AS9145 – Advanced Product Quality Planning and Production Part Approval Process and the linkage between the two documents.

Who should attend?

This course is designed for leaders and team members who need to understand the principles of PFMEA and Control Plan but who will not be leading application. It will be suitable for leaders who need to provide resource and drive engagement with the process as well as staff who may be asked to contribute to the process. Staff who need to lead PFMEA and Control Plan activities should attend the two day Practitioner course.

Benefits and Learning Objectives

PFMEA is used to support the introduction of new products and processes as well as supporting changes to existing products and processes. It is often mandated by aerospace and other engineering primary manufacturers as a specific requirement to support the goal of defect prevention and the reduction of variation and waste. Companies that apply PFMEA and Control Plans successfully, see improved product conformity, better on time delivery performance and a reduction in the cost of non-quality.

Delegates will become competent to participate in Process FMEA and Control Plan development and will develop an understanding of the methods to implement the approaches within their organisation.

Topics covered

- Purpose and overview of the FMEA process
- General review of FMEA principles
- Process FMEA including start points
- FMEA ranking tables and scoring
- Key Characteristics and Critical Issues identification
- Purpose and overview of Control Plans
- Control Plan linkage
- Understanding the process
- Value added controls
- Reaction plans

AS13003 MSA Essentials for Aerospace



1 day course

Course Overview

Measurement System Analysis, or MSA, is a method for gaining an understanding of the variation present in measuring systems. A high level of confidence is required for the measurement of product and process characteristics.

This one day course provides an understanding of the MSA requirements for AS9145 – Advanced Product Quality Planning and Production Part Approval Process.

Who should attend?

This course is designed for leaders and team members who need to understand the principles of MSA but who will not be leading application. It will be suitable for leaders who need to provide resource and drive engagement with the process as well as staff who may be asked to contribute to the process. Staff members who need to lead MSA activities should attend the two day Practitioner course. Familiarity with basic statistical concepts would be beneficial but not necessary.

Benefits and Learning Objectives

MSA is used when an understanding of measurement system variability is required. MSA studies will decompose measurement system variability into equipment, operator and part variation.

It is often mandated by aerospace and other engineering primary manufacturers as a specific requirement on their suppliers to give them confidence in the measurements that are being taken and reported by the supplier. MSA will support understanding measurement system performance and allow any performance limitations to be actioned appropriately.

Delegates will become competent to participate in Measurement Systems Analysis and will develop an understanding of the methods to implement analysis within their organisation.

Topics covered

- Overview of MSA
- Variable and attribute data
- Range Method
- Average and range method
- ANOVA method
- Attribute agreement analysis
- Gauge performance curves
- Understanding and interpreting results

AS13003 SPC Essentials for Aerospace



1 day course

Course Overview

Statistical Process Control is a method for gaining an understanding of the types of variation within a process and hence guide actions to either control or reduce this variation.

This one day course provides an understanding of the SPC requirements for AS9145 – Advanced Product Quality Planning and Production Part Approval Process.

Who should attend?

This course is designed for leaders and team members who need to understand the principles of SPC but who will not be leading application. It will be suitable for leaders who need to provide resource and drive engagement with the process as well as staff who may be asked to contribute to the process. Staff members who need to lead SPC activities should attend the two day Practitioner course. Familiarity with basic statistical concepts would be beneficial but not necessary.

Benefits and Learning Objectives

Statistical Process Control (SPC) can be used to understand the types of variation present within manufacturing process. By understanding the types of variation present actions can be taken either to eliminate the variation or reduce its impact. If the variation is excessive the process can be stopped to avoid making nonconforming product.

It is often mandated by primary manufacturers as a specific requirement to support the management of critical product or process characteristics. Companies that apply SPC successfully, see improved product quality, on time delivery performance and reduction in the cost of non-quality.

Delegates will become competent to participate in Statistical Process Control activities and will develop an understanding of the methods to implement controls within their organisation.

Topics covered

- Overview of SPC
- Concepts of process variation
- Understanding common and special cause variation
- Charting for variable data
- Charting for attribute data
- Control limits
- Capability calculation

Course formats and locations

Industry Forum is able to deliver AS aligned courses around the world through our permanent delivery team and longstanding expert associate network. For example Industry Forum has recent experience delivering aerospace management systems training in the UK, France, Spain, Italy, Germany, USA, Mexico, China, India, Japan, Singapore and Malaysia. The course content and materials are provided as standard in English language

Industry Forum operates a programme of 'open' courses on pre-set dates for delegates from multiple companies. These are based at our Birmingham UK office and at a US location. Each open course seats up to 15 delegates and places can be booked through our website.

<https://www.industryforum.co.uk/training/#aerospace>

Additional 'open' courses can be set up in any country where appropriate demand requirement is identified either through the leading customers or by known interest level from suppliers. To express interest in attending a course at a location in your region, please email courses@industryforum.co.uk. Interested companies will be contacted when sufficient demand is in place to set up a local course in order to agree suitable dates and venue.

Organisations who would like to hold a course for their own personnel only should also email courses@industryforum.co.uk. Our team will respond to understand your requirements in more detail and prepare a bespoke proposal. It is typically more cost effective for organisations to undertake training in this format where there are several delegates requiring training.

Other training available from Industry Forum

Industry Forum is able to provide training and consultancy to support multiple capability areas of an organisation including:

- Strategy development, business planning and policy deployment
- Operational leadership development programmes and cultural change
- Value stream mapping and manufacturing facility transformation
- 'Lean' continuous process improvement application
- Six sigma training, certification and project implementation
- Total Productive Maintenance programmes (JIPM aligned)
- New product introduction process development
- Project management
- Certified APICS supply chain qualifications (CPIM, CSCP, CLTD)
- APICS principles based supply chain training and implementation activity

For more details please visit www.industryforum.co.uk or email courses@industryforum.co.uk



Competitive advantage through operational excellence

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