

Failure Mode and Effects Analysis

Course Description

Failure Mode and Effects Analysis (FMEA) is a workshop-based course – participants learn by performing real analysis on real projects.

A series of worksheets and a structured process of sequential screening focuses on the real risk and screens-out the trivia. This results in shorter FMEA reports that highlight actionable items for design changes, mistake-proofing, or improved controls.

The materials presented are based upon the intent of SAE, AIAG, and other automotive publications on the subject of FMEA.

FMEA can be an effective tool for risk management. FMEA can be used to identify, prioritize, and manage failure before it occurs, as one element within an R&M program. Unfortunately, FMEA is too often seen as a nuisance and an administrative burden, getting in the way of real work.

Course Objectives

By the end of this two-day course, participants will be able to:

- Document the Process Flow
- Perform an Initial Risk Assessment
- Develop an FMEA Strategy
- Perform the FMEA
- Prioritize Risk
- Develop Action Plans
- Document Control Plans
- Contribute Significantly to Future FMEAs

Course Outline

1. Introduction to FMEA
2. AQP and R&M – FMEA in Perspective
3. Step by Step – The FMEA Process
4. Managing Recommended Actions
5. Managing Requirements via Control Plans
6. Documentation to Support FMEA

Unique Approach

This course was developed to serve the needs of tooling and equipment suppliers. Here are some differentiating features:

- People Learn while Solving Real Problems
- Rational Structure to Determine Scope
 - Process FMEA for Concept
 - Machinery FMEA for Tool Design
 - Process FMEA for Process Control
- Project Specific Plan to Manage Scope
- Structured Sequential Screening
 - Failure Mode Definition
 - Causes and Effects
 - Design vs. Machine Controls
 - Numeric Ranking Strategies
- FMEA Limited to First-Level Causes
 - Target Root Cause Analysis Efforts
- Strategy for Assessing Risk
 - High Severity Risks
 - High Design Risks
 - High Risk Priority Numbers
- Evaluate Control Strategies
 - Cause Controls
 - Failure Mode Controls
- Error Proofing Applied to Causes
- Mistake Proofing Applied to Failure Modes

Preparation for the Course

To get the most out of this course, preparation is required. This includes the following:

- Selection of Participants
- Selection of FMEA Targets
- Formation of FMEA Teams
- Gather Materials to Bring
 - Customer Specifications
 - Proposals and Commitments
 - Plant/Equipment Layouts
 - Sequence of Operations
 - Bill of Materials
 - Lessons Learned
 - Reliability Studies

With this preparation, it is typical for each team to complete an FMEA and develop risk avoidance strategies during the two-day course.