Machinery FMEA Course Outline

- Introduction to Machinery Failure Mode and Effects Analysis (MFMEA)
- History and Purpose of FMEA
- Team Structure and Efficiency
- What is Risk?
  - Criticality (Severity * Occurrence)
  - When to Take Action
- Reliability and Maintainability
- Mean Time Between Failure (MTBF)
- Mean Time to Repair (MTTR)
- Relationship between Machinery FMEA and Process FMEA
- Machinery FMEA Development Methodology (Quality-One Three-Path Model)
  - Pre-work
    - Failure Mode Avoidance (FMA) – Past experiences with failure
  - Path 1
    - Define / Scope the FMEA
    - Assemble the Cross Functional Team (CFT)
    - Create / Review Process Flow Chart or Diagram
      - Identify sub-processes and machinery / tooling design requirements
    - Determine Functions, Failure Modes, Effects and Severity Rankings (MTBF)
    - Take Action on High Severity Items
  - Path 2
    - Conduct Risk Analysis
    - Determine Potential Causes and Prevention Controls and Occurrence Rankings (MTTR)
      - Utilize Decision Matrix / Decision Tree for Single Point Failure, Existing Controls and Detectability
Take Action to Reduce High Occurrences
  o Path 3
    ▪ Determine Detection Methods for Machinery Failure and Detections Rankings
    ▪ Take Action to Improve Detection Controls
  o Review Recommended Actions and Assign Responsibility/Date
    ▪ Confirm Management Agreement / Approval
  o Revisit Rankings after Actions Taken