

Failure Mode Effects Analysis the Plant Wellness Way FMEA Training Course by Online Distance Education

The Plant Wellness Way Methodology gets you using physics-of-failure science when doing FMEA for plant and equipment design, and for root cause analysis of your plant and equipment failures.

Learn this powerful approach for truly understanding how plant and equipment can fail in service and the best ways to prevent it.

Course Content

History of FMEA Development

Building Reliable Plant and Equipment

Reliability Engineering Terms

Failure Mode Effects Analysis (FMEA)

A Maintenance Strategy Selection Process

Failure Means Functional Failure

The Physics of Parts Failure

Stress from Distortion Fails Machinery

Degradation Rate Vs Temperature

Know the Stress Limits of Your Parts

The Equipment Designer Wanted a Long, Trouble-Free Service Life

Causes of Atomic and Microstructure Stress

Failure is ALWAYS a Design Requirement/Criteria

How might My Machine/System fail?

Functional Analysis

Failure Modes – “What You Detect when it Fails.”

Hidden Failures

Identify the Functional Failures

System / Components Function

If things go wrong... what will be the resulting Impacts?

If things go wrong... what will be the resulting Effects?

Is the Failure Mode a Valid Concern?

Top-Down Block Diagram Analysis

Functional and Hardware Approaches

Functional Analysis of a System

Parts Level FMEA (Hardware Analysis)

Simple Failure Mode Effects Analysis Table (FMEA the Plant Wellness Way Table)

From FMEA to Selecting Maintenance Tasks

Measure Likely Improvement from the Task

Doing an FMEA in the Context of Maintenance Practices

The FMEA Team

Deficiencies of FMEA

Functional Level Item Review

List the Functional Failures

List the Failure Modes for Each Failure

Prioritise Failure Modes

Analyse Failure Causes

Analyse Failure Cause Sources

Selecting Maintenance Tasks (Top Down)

Selecting Maintenance Tasks (Bottom Up)

FMEA Implementation

FMEA Process – Preliminary Tasks

FMEA Process – More Preliminary Tasks

Post FMEA Process

FMEA Summary

Activity 1 – Physics of Failure Factor Analysis (POFFA)

Develop a Physics of Failure Life Cycle Table for the bearing OR for a part in your own equipment

Activity 2 – Parts Level Failure Mode Effects Analysis (FMEA)

Do a Hardware FMEA for this equipment part OR for a part from equipment in your operation —make your own ‘simple’ FMEA Table. You must do at least 6 separate failure modes

Activity 3 – Asset Functional Failure Mode Effects Analysis

Do a Functional FMEA for this item of plant OR for an item of plant in your operation —make your own ‘simple’ FMEA Table. You must do at least 6 separate failure modes

Activity 4 – Identify Reliability Standards

Identify the full range of standards that need to be set for each equipment type working in the operating situations listed in the table to get world class asset reliability performance.