BOOST
THE LEADING TRAINING PROVIDER

Maintenance & Reliability Management

Failure Investigation, Analysis & Diagnosis Strategies & Methodologies

Course Introduction

The FIVE Days Program for Industrial Field aims to convey the latest thinking and best practice of all Equipment related to Industry Equipment Components, Operation and Troubleshooting, Condition Monitoring and Failure Analysis Techniques via Lectures, Case Studies, and Program activities. The course also gives a detailed advanced treatment of the detection, location and diagnosis of faults in Plant Equipment as a Process of Troubleshooting.

Improving Machinery performance.

Case study examples are used throughout the program to emphasize key points and to underline the relevance and applicability of the topics being addressed. The program will provide a refreshment of knowledge for how to make Problem Analysis and what are main problems faced during operations. It will provide a solid foundation for Technologists moving into a machine monitoring and diagnostic role. All delegates will learn the failure investigation techniques, and tools of procedure of root cause failure analysis and failure mode effective analysis as a reactive and proactive strategy for achieving precise operation, and improving Machinery performance. This course offers insight into how to analyze a system’s failure modes and define how to prevent or find those failures early.

Target Audience

- Facilities Engineer
- Facilities Engineering Manager
- Facilities Manager
- Facilities Specialist / Coordinator
- Health and Safety Engineer
- Maintenance Group Leader
- Maintenance Helper / Assistant
- Maintenance Manager
- Maintenance Superintendent
- Maintenance Supervisor

- Mechanical Reliability Engineer
- Network Reliability Engineer
- Operations and Maintenance Specialist
- Reliability Engineer

Learning Objectives

- Consolidate and update understanding of the Terminology used in Measuring and Analysis.
- Provide methods and devise solutions to improve equipment through the prediction and the avoidance of Equipment Failure.
- Maximize component life by avoiding the cause of failure.
- Be familiar with condition based maintenance rather than corrective maintenance.
- Use casual factor chart to identify data to be collected Produce a root cause map and Identify Root Causes
- Apply RCA to work activity weather Technical or Non Technical Implement real improvements in machinery reliability and plant performance.
- Use case studies based on both Technical and Non Technical Situations.
- Analysis issues from their workplace implement Underlying Concepts
- Apply the RCM Methodology to develop a Maintenance Practice for their Plant Assets.

Course Outline

- **01 DAY ONE**

  Module (01) Concept of Failure

  - 1.1 Equipment Failure
  - 1.2 Types of Failure Causes
  - 1.3 Affect of Failure
  - 1.4 Failure Cascading
  - 1.5 Failure Modes

- 1.6 Chronic vs. Sporadic Failures
- 1.7 Application on Chronic & Sporadic (Exercises)

Module (02) Root Cause Failure Analysis Process

- 2.1 What RCFA is? Why it is done?
- 2.2 Types of Root Causes
- 2.3 SEVEN Generic Steps in an RCFA
- 2.4 Challenges in Setting up RCFA
- 2.5 Sustaining an RCFA Process
- 2.6 Application on RCFA (Exercises)

• **02 DAY TWO**

Module (03) Failure Mode and Effect Analysis (FMEA)

- 3.1 Failure Analysis Methods
- 3.2 Common Failure Analysis Techniques
- 3.3 Implementing FMEA
- 3.4 FMEA Procedure
- 3.5 Application on FMEA (Exercises)

Module (04) Failure Analysis & Investigation Tools

- 4.1 Brainstorming
- 4.2 Flow Charts
- 4.3 Histograms
- 4.4 Fishbone Diagrams
- 4.5 Pareto Charts
- 4.6 Fault Tree Analysis
- 4.7 Application on Fishbone (Exercises)

• **03 DAY THREE**

Module (05) Machinery Troubleshooting

- 5.1 Condition Monitoring
- 5.2 Machine Failure Modes
- 5.3 Fault Tree Analysis
- 5.4 Methods of Detection
- 5.5 Applications (Machine Failure) (Exercises)

Module (06) Structured Problem Solving Techniques

- 6.1 Win - Win Problem Solving
- 6.2 Development of Problem Solving Skills

- 6.3 Alternative Solution Training
- 6.4 Formulate Alternative Strategies
- 6.5 Guidelines for Decision Making
- 6.6 Priority - Setting

• **04 DAY FOUR**

Module (07) Machine Reliability Enhancement

- 7.1 Risk Assessment and Management
- 7.2 Life Cycle Management
- 7.3 Reliability & Maintainability
- 7.4 Techniques & Analysis of Reliability
- 7.5 Human and System Reliability
- 7.6 Human Performance Approach
- 7.7 Strategic Maintenance Issues & Latest Research
- 7.8 Selecting Tasks - Proactive Versus Reactive

Module (08) Dealing with Undesirable Outcomes

- 8.1 Routine Maintenance (PM, CBM, FF, FT)
- 8.2 Modify to improve Reliability
- 8.3 Modify to improve Maintainability
- 8.4 Modify to reduce Consequence of Failure
- 8.5 Change People Capability
- 8.6 Change Organizational Policies, Procedures
- 8.7 Assess residual Risk to measure Effectiveness

• **05 DAY FIVE**

Module (09) Examples of Technical Aspects related

- 9.1 Mechanical Equipment
- 9.2 Pneumatics
- 9.3 Electrical Machine
- 9.4 System Problem
- 9.5 Learning from Failure
- 9.6 Upgrade Physical Asset and its Control
- 9.7 Upgrade Human Capability
- 9.8 Workplace Measures

Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
May 5, 2025	May 9, 2025	5 days	4250.00 $	UAE - Dubai
Sept. 1, 2025	Sept. 5, 2025	5 days	4250.00 $	UAE - Dubai
Dec. 1, 2025	Dec. 5, 2025	5 days	5950.00 $	USA - Texas