



London TDM

Mechanical and Electrical Engineering Training Courses

Course Venue: United Kingdom - London

Course Date: From 16 November 2025 To 20 November 2025

Course Place: London Paddington

Course Fees: 7,500 USD

Introduction

The "Mechanical Failure Analysis and Prevention" course is designed to equip engineering professionals with the necessary skills to analyze mechanical failures and develop effective strategies for prevention. Over the course of five days, participants will explore the core principles of failure analysis, including the identification of failure modes, investigation techniques, material behavior, and preventive measures. The course aims to enhance participant competence in addressing mechanical failures in their respective fields, ultimately improving equipment reliability and operational efficiency.

Objectives

- Understand fundamental concepts and theories of mechanical failure analysis.
- Learn to identify various failure modes and their causes.
- Develop skills in deploying investigation techniques and tools for failure analysis.
- Gain insights into material characteristics and their impact on failures.
- Formulate and implement prevention strategies to minimize mechanical failures.

Course Outlines

Day 1: Introduction to Mechanical Failure Analysis

- Overview of failure analysis and its significance in engineering.
- Types of mechanical failures and common causes.
- Roles and responsibilities in failure analysis.
- Basic terminologies and definitions.
- Introduction to the process of conducting a failure analysis.

Day 2: Failure Modes and Mechanisms

- Detailed study of various failure modes (e.g., fatigue, wear, corrosion).
- Understanding the mechanisms behind different failure modes.
- Illustrative case studies highlighting specific failures.
- Identifying early signs of mechanical failure.
- Introduction to failure mode and effects analysis (FMEA).

Day 3: Investigation Techniques and Tools

- Overview of investigative tools and technologies in failure analysis.
- Microscopic and macroscopic examination techniques.
- Non-destructive testing methods.
- Data collection and analysis methodologies.
- Root cause analysis and corrective action recommendations.

Day 4: Material Behavior and its Impact on Failure

- Review of material properties relevant to mechanical failures.
- Influence of material selection and processing on durability.
- Effect of environmental factors on material degradation.
- Case studies: Material failures and lessons learned.

- Approaches to improving material performance.

Day 5: Preventive Measures and Case Studies

- Formulating prevention strategies to avoid repeat failures.
- Design improvements for enhanced reliability.
- Maintenance practices that prevent mechanical failures.
- Industry-specific case studies and best practices.
- Interactive session: Developing an action plan for specific challenges.