€TRAINING

7001-11 Reliability, Availability, and Maintainability (RAM)

21 July - 1 August 2024
Dubai (UAE)

7001-11 Reliability, Availability, and Maintainability (RAM)

REF: O2341 DATE: 21 July - 1 August 2024 Venue: Dubai (UAE) - Fee: 9915 Euro

Introduction

Reliability, Availability, and Maintainability RAM focuses on actions in order to help attendees enhance the performance of material systems. RAM provides extensive processes and techniques to study and manage the total Life Cycle Costs of an asset to boost cost efficiency. Underlines design for RAM and RAM verification activities to provide the viewpoints of the producer and customer.

Course Objectives

- Understand the importance of RAM in the process industries

- Understand how RAM is linked to life cycle cost

- Describe the fundamental concepts of RAM

- Explain the key factors affecting plant availability

- Construct their own databank

- Adjust maintenance strategy

- Derive system Reliability Block Diagrams, containing more complicated elements such as recycling and buffer storage

- Model process reliability/ availability

- Effectively enhance reliability, availability, and throughput

- Cost-effectively employ standby equipment

- Explain RAM requirements

- Articulate the implications of RAM requirements

- Test against their requirements

- Apply a design for a reliability program to meet RAM standards

- Anticipate warranty costs

- Identify the risks of incorrectly passing and failing formal demonstration tests

- Plan for in-service Reliability monitoring

Targeted Audience

- Engineers and Technical Professionals

- Project Managers

- Maintenance and Operations Staff

- Quality Control Personnel

- Anyone Interested in Enhancing System Performance and Reliability

Course Outline

Unit 1:

- Reliability's Influence on User Experience

- Availability's Role in Downtime Mitigation

- Maintainability's Contribution to Efficiency

- Differentiating RAM Concepts

- Importance in System Design

Unit 2:

- Mean Time Between Failures MTBF

- Mean Time to Repair MTTR

- Availability Calculation Methods

Unit 3:

- Exponential, Weibull, Normal Distributions

- Selecting Appropriate Distribution Models

- Data Gathering Methods

- Estimating Reliability Parameters

- Reliability Testing

Unit 4:

- Availability Metrics and Definitions

- Calculating System Availability

- Incorporating Maintenance and Repair Times
- Redundancy Strategies
- Mean Time Between Failures vs. Mean Time to Repair

Unit 5:

- Types of Redundancy

- Redundancy's Impact on Downtime

- Preventive vs. Corrective Maintenance

Unit 6:

- Reliability Life Models

- Reliability Data Collection and Classification

- Reliability Testing

- Warranty and Maintenance.

- Preventive Maintenance Models, Effective Maintenance, and Optimum Policy.

Unit 7:

- Life cycle activities

- Life cycle models

- Fault, manpower, and cost profiles over the life cycle

- Software Development Life Cycles SDLC

- Development phases

- What constitutes testing

Unit 8:

- Rounding Data

- Integration formulas

- Differential formulas

- Partial derivatives expansion of $a + b^n$

- Failure physics

Unit 9:

- Critical and life-limited items

- Maintainability and maintainability demonstrations

- Reliability Centred Maintenance RCM

- Methods of improving reliability

Unit 10:

- Reliability Block Diagrams RBDs

- Repairable System Analysis

- Reliability Growth Modeling

- RAM Organizational Considerations and Maturity

Unit 11:

- Exponential

- Failure rate dimensions

- Mean time between failures

- Calculations of Pc for single devices

- Distribution and reliability models

Unit 12:

- Test objectives and methods

- Test objectives

- Attribute test methods

- Statistical confidence

- Test-To-Failure methods

- Life test methods