MERCURY

# Maintenance Errors: Understand, Identify, and Manage Course

28 March – 1 April 2027
Cairo (Egypt)



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Istanbul - Türkiye: +90 539 599 1206
Amman - Jordan: +962 79 712 3347

# Maintenance Errors: Understand, Identify, and Manage Course

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## Introduction:

Human factors are by far the most significant cause of failures and incidents in maintenance. This applies not only to branches like aviation but also to chemicals, oil and gas, energy, and transportation. Investigation shows that approximately 12% of all aviation accidents are caused by a maintenance factor. At coal-fired power stations, 56% of forced outages happen within a week after a planned or maintenance shutdown. A power distribution company reported that, on average, between 50 and 60% of all failures are related to a maintenance error.

In the past, we faced severe and tragic accidents in various branches. Maintenance errors at least contributed to all of the above-mentioned significant accidents. Because we are heavily dependent on complex modern technologies with high speed and immense power and volumes, maintenance errors can have severe consequences regarding safety, environmental issues, downtime, and costs. Maintenance errors should be treated as a business risk considering the numbers and consequences. We cannot eliminate the risk of maintenance error, but we can manage it more effectively.

This maintenance management and reducing human error course introduces participants to the skills and knowledge area of maintenance errors. It demonstrates why people make mistakes, not only in executing a maintenance job but also in planning and preparing the job, writing the maintenance manual, and engineering the asset.

It shows how we could learn about maintenance errors by analyzing technical failures and incidents in a structured way. This maintenance management and reducing human error course demonstrates how we could manage maintenance errors by managing the person, the task, the team, the workplace, and the organization and by creating a safety culture.

## Targeted Groups:

- Maintenance Professionals.
- Engineering Professionals.
- Production Professionals.
- Safety Professionals.
- Anyone who wishes to update themselves on the human factor in maintenance and learn how to implement maintenance error management to benefit their organizations.

## Course Objectives:

At the end of this maintenance management and reducing human error course, the participants will be able to:

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- Understand how significant the human factor in maintenance is.
- Explain what human factors could cause maintenance errors.
- Apply a structured approach to find the root cause of technical failures and incidents.
- Understand the basic principles of Maintenance Error Management.
- Explain how managing maintenance errors interacts with implementing a safety culture and how they support each other.
- Develop an action plan to manage maintenance errors in your area of responsibility.

## Targeted Competencies:

At the end of this maintenance management and reducing human error training, the target competencies will:

- The Human Error in Maintenance Phenomenon.
- The Fundamentals of Human Performance - Psychology meets Engineering and Maintenance.
- Different Types of Human Error.
- Contributing Circumstances.
- Primary Methodologies to Analyze Technical Failures and Incidents.
- Principles of Maintenance Error Management: person - task - team - workplace - organization and how to implement it.
- Creating a Safety Culture.

## Understanding Maintenance Management and Reducing Human Error:

If you want to understand the intricacies of maintenance management and how to reduce human error in maintenance operations, consider enrolling in a Maintenance Management course. This course delves into the principles of maintenance planning, engineering, and management, offering insights into effectively managing maintenance tasks and minimizing human error.

Throughout the Maintenance Management training, you'll explore maintenance engineering and learn about various human errors that can occur in maintenance processes. The course covers fundamental aspects such as maintenance definition, maintenance management analysis, and strategies for managing maintenance efficiently.

By completing this program and earning a maintenance management certificate, you'll gain valuable knowledge and skills for enhancing human performance in engineering and maintenance roles. This course equips you with practical approaches to optimize maintenance management programs, ensuring smooth operations and reduced errors in maintenance activities.

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# Course Content:

## Unit 1: Introduction to Human Error in Maintenance:

- We do not want to talk about it, but.
- The Significance of Human Error in Maintenance.
- Relationship with Risk and Risk Management.
- The Human Risk.
- The Psychological Aspects of Human Error.
- Human Attention.
- Levels of Human Performance: Skill-based, Rule-based, Knowledge-based.

## Unit 2: Human Error - What is it?

- Different Types of Human Error in Maintenance.
- How to identify them?
- Contributing Factors and Circumstances.
- The Consequences of Maintenance Errors.

## Unit 3: How to Learn from Maintenance Errors:

- Primary Methodologies to Analyze Technical Failures and Incidents.
- Multiple Realities.
- Subjective Views.
- Effective Problem Solving.
- Cause and Effect Relations.
- RCA Methodologies - Application.
- Apollo RCA.
- Tripod.

## Unit 4: Maintenance Error Management:

- Principles of Maintenance Error Management.
- Possible measures to take:

  - Person and Team.
  - Workplace and Task.
  - Organization.
  - Creating a Safety Culture.

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## Unit 5: Implementation:

- Implementation Aspects.
- Performance Management.
- Influencing the Behaviour of People to Gain Better Results.
- Action Plan.
- Case Study.

## Conclusion:

The Maintenance Management and Reducing Human Error course is a comprehensive training program designed to equip participants with essential skills in maintenance management and strategies to mitigate human errors. This course covers the principles of maintenance planning, engineering, and management, providing a solid foundation for understanding maintenance processes and optimizing performance.

Through this maintenance management training, participants gain insights into different types of human errors in maintenance activities and learn practical approaches to minimize these errors. By completing the course and earning a maintenance management certificate, individuals enhance their expertise in engineering and maintenance, enabling them to contribute more effectively to organizational goals.

The program emphasizes the importance of maintenance definition and management analysis, offering practical tools and techniques for managing maintenance operations efficiently. Ultimately, this course empowers participants with the knowledge and skills to enhance human performance, optimize maintenance management, and foster a reliability and safety culture within maintenance and engineering domains.