



Maintenance Errors Understanding, Identifying and Managing the Human Factor



Introduction:

Human factors are by far the largest cause of failures and incidents in maintenance. This goes not only for branches like aviation, but also for chemicals, oil & 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 serious and tragic accidents in various branches. Maintenance errors at least contributed to all of the above mentioned major accidents. Because we are heavily dependent on complex modern technologies with high speed and large power and volumes, maintenance errors can have serious consequences in terms of safety, environmental issues, downtime and costs. Considering the numbers and consequences, maintenance errors should be treated as a business risk. We cannot eliminate the risk of maintenance error completely, but we can manage it more effectively.

This BTS training 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 & preparing the job, in writing the maintenance manual and in engineering the asset. It shows how we could learn of maintenance errors, by analyzing technical failures and incidents in a structured way. And the course demonstrates how we could manage WWW.BTSCONSULTANT.COM

maintenance error by managing the person, the task and the team; the workplace and the organization; and by creating a safety culture.

This training course will highlight:

- The human error in maintenance phenomenon and why it is important
- The fundamentals of human performance – psychology meets engineering & maintenance
- Different types of human error
- Contributing circumstances
- Basic 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

Who Should Attend?

This BTS training course is suitable to a wide range of professionals, but will greatly benefit:

- All professionals involved in Maintenance, Engineering, Production and Safety
- Anyone who wishes to update themselves on the human factor in maintenance and learn how to implement maintenance error management for the benefit of their organizations

Course Objectives:

At the end of this training course, delegates will be able to:

- 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 it supports each other
- Develop an action plan to manage maintenance errors in your own area of responsibility

COURSE OUTLINE:

Day One: Introduction to Human Error in Maintenance

Competency Description: The objective is to establish a strong understanding of the human factor in maintenance errors and what you can do about it.

Key behaviors

- Understand the significance
- Understand how human error in maintenance relates to the broader perspective of risk management & safety culture
- Identify risk
- Identify the psychological background of human error
- Identifying and learning from best practice

Topics to be covered

- We do not want to talk about it, but....
- The significance of human error in maintenance
- Relationship with risk & risk management
- The human risk
- The psychological aspects of human error
 - Human attention
 - Levels of human performance: skill-based, rule-based, knowledge-based

Day Two: Human error – What is it?

Competency Description: The objective is to understand the different types of human error in maintenance, the contributing factors and the consequences.

Key behaviors

- Identify the types of human error in maintenance
- Understand the contributing factors
- Identify the possible consequences
- Apply it in your own organisation
- Identifying and learning from best practice

Topics to be covered

- Different types of human error in maintenance
- How to identify them?
- Contributing factors and circumstances
- The consequences of maintenance errors
- Case study

Day Three: How to Learn from Maintenance Errors

Competency Description: The objective is to understand how to learn from maintenance errors by identifying the root causes and take preventive measures.

Key behaviors

- Understand that there is human error in research too
- Understand the principle of preventive and corrective actions
- Identify different methodologies to find root causes and understand the principles
- Apply them in your own organisation
- Identifying and learning from best practice

Topics to be covered

- Basic methodologies to analyse technical failures and incidents
- Multiple realities

- Subjective views
- Effective problem solving
- Cause and effect relations
- RCA methodologies – Application
 - Apollo RCA
 - Tripod
- Case study

Day Four: Maintenance Error Management

Competency Description:

The objective is to understand how to prevent human error in maintenance as much as possible.

Key behaviors

- Understand the basic principles of Maintenance Error Management
- Apply Maintenance Error Management in your own organisation
- Identify the key elements of a safety culture
- Understand the relationship of the safety culture of the organisation and Maintenance Error Management
- Identifying and learning from best practice

Topics to be covered

- Principles of Maintenance Error Management
- Possible measures to take:
 - Person & Team
 - Workplace & Task
 - Organisation
- Creating a safety culture

Day Five: Implementation Workshop

Competency Description:

The objective is to establish that all learning points will be ensured and that you are able to apply it in your own working environment.

Key behaviors

- Identify the most important implementation aspects of human error management
- Understand the mechanism behind the behaviour of people and how to influence it
- Develop action plans
- Apply them in your own organisation
- Identifying and learning from best practice

Topics to be covered

- Implementation aspects
- Performance management: influencing the behaviour of people to gain better results
- Action plan
- Case study