Safety Engineering Mastery: Advanced Techniques in Hazard Control, Risk Assessment, and Reliability

Energy Milestones Corporation

Advancing Professionals to the next level

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Overview

Plant Managers and Engineers are becoming increasingly aware that safety and risk impact every aspect of their plants' day-to-day operations, including engineering and process systems, to comply with ever-changing and demanding International and National environmental and economic standards. Unsafe systems can result in monies being lost due to accidents, disruption to production, criminal and civil prosecutions, loss of market share, degradation of company assets and the environment

Course Objectives

- Apply the principles of hazard identification and risk assessment to processes and machinery.
- Understand the reliability concept and the use of failure tracing methods
- Demonstrate a practical understanding of a quantitative risk assessment technique and the data required for records
- Advise management on the most effective control methods based on the evaluation of risk
- Identify the general requirement for the development of a safe system of work
- Recognise relevant International Standards for Reliability and Machinery Safety
- Promote a proactive attitude within the individual toward hazard analysis

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Course Content

1. Hazard Identification
   - Why do we need safety engineering
   - Examples of major disasters
   - The safety system process
   - Hazard identification
   - Hazard control
   - Criteria for risk tolerability
   - Hazard Identification Techniques
   - Design out hazards
   - Safety standards codes, national and international
   - Safety analysis in engineering
   - Safety analysis in Chemical process
   - Safety analysis in manufacturing

2. Risk Assessment Techniques
   - Safety Management
   - Safety in the system life cycle
   - Hazard identification checklist
   - Process, workplace, work equipment risk assessment
   - Task-based risk assessment
   - Introduction to HAZOP

3. Machinery and Work Equipment Safety
   - Causes and methods for machinery accident prevention
   - HAZOP examples
   - Failure modes, human factors, and software safety
   - Conducting a failure mode and effects analysis
   - Human factors safety analysis
   - Performance and human error
   - Human factors and safety analysis

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4. Reliability Technology

- Types and causes of failures
- Methods of preventing failure
- Types of maintenance and inspection regimes
- Reliability of components and systems
- Design and reliability of control systems
- Design and reliability of protective systems
- The concept of 'HIPS'
- Safety Integrity Levels 'SIL' selection

Targeted Audience

- Operations & Process Professionals
- Reliability & Safety Professionals
- Other professionals involved in process improvement

Course Methodology

Facilitated by an experienced professional trainer, this training course will be conducted as a highly interactive workshop session. A variety of training methodologies and facilitation techniques will be employed before and during the course, as applicable. These methods are aimed at enhancing individual and group interaction while maximising learning. Some of these methods are:

- Online Pre-post Test
- Colourful Visual Aids
- Gamification
- Self-Assessment Instruments
- Simulations
- Case Studies
- Videos
- Group Exercises & Discussions
- Role plays
- Indoor & Outdoor games