Functional Safety

Potential PDH: 24

Description:

This comprehensive course is designed to provide an in-depth understanding of Functional Safety as per the IEC-61511 standard, which sets the requirements for the functional safety of safety instrumented systems (SIS) in the process industry. Throughout the course, participants will learn to identify, design, implement, operate, and maintain safety systems that comply with international standards, ensuring the protection of people, equipment, and the environment.

Outline:

- **Introduction to IEC-61511**: Understand the purpose, scope, and structure of the IEC-61511 standard, as well as its relationship with other functional safety standards such as IEC-61508.
- **Risk Analysis and Safety Assessment**: Learn to conduct risk analyses and safety assessments using methodologies such as HAZOP, LOPA, and FMEA to identify hazards and determine the necessary safety integrity levels (SIL).
- **Safety Requirements Specification (SRS)**: Develop and document safety requirements for safety instrumented systems, including the definition of safety functions, performance criteria, and test parameters.
- **SIS Design and Implementation**: Learn best practices for the design and implementation of safety systems, including the selection of appropriate technologies and components, system architecture, and integration with other control and monitoring systems.
- **Verification and Validation**: Establish procedures for the verification and validation of SIS, ensuring they meet specified requirements and function correctly under all operating conditions.
- **Operation and Maintenance**: Develop procedures for the operation and maintenance of SIS, including change management, periodic testing, and response to failures and abnormal events, ensuring the system's integrity and reliability over time.
- **Functional Safety Assessment (FSA)**: Conduct functional safety assessments to verify that systems comply with IEC-61511 requirements, including audits, design reviews, and performance testing.
- **Functional Safety Management**: Implement a functional safety management system that includes policies, procedures, and responsibilities to ensure continuous compliance with the IEC-61511 standard.
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Course Methodology:

The course combines theory and practice through presentations, case studies, practical exercises, and group discussions. Participants will have the opportunity to apply the knowledge gained in real-world situations and receive feedback from subject matter experts. Additionally, specific tools and software for safety system evaluation and design will be used.

Who Should Attend:

This course is aimed at safety engineers, control system designers, project managers, maintenance personnel, and any professional involved in the implementation and maintenance of safety instrumented systems in the process industry. It is also suitable for consultants and auditors who wish to deepen their understanding of the IEC-61511 standard requirements

Course Benefits:

- **In-depth Knowledge**: Gain a thorough and detailed understanding of the IEC-61511 standard and its application in the process industry.
- **Practical Skills**: Develop practical skills for the design, implementation, operation, and maintenance of safety instrumented systems.
- **Regulatory Compliance**: Ensure compliance with regulatory requirements and improve the safety and reliability of operations.
- **Networking Opportunities**: Connect with other industry professionals and share experiences and best practices.

Subject Matter Expert (SME):

Carlos Javier Gasco Lallave is a highly experienced professional in the field of instrumentation, process control, and functional safety. He currently serves as the Division Manager for Becht's Electrical, Instrumentation & Controls Division. With over 20 years of experience, Carlos has led engineering projects in industries such as oil and gas, petrochemicals, and energy, ensuring the safety and efficiency of complex industrial processes.

Carlos holds a Master's degree in Physics, specializing in Industrial Physics: Automation – Electronics, from the UNED (Universidad Nacional de Educación a Distancia). He is also certified as an Expert in Control & Regulation of Industrial Processes from the Complutense University of Madrid. He is Certified Functional Safety Expert (CFSE) and member of the CFSE Advisory Board. His expertise includes designing and implementing control systems, overseeing regulatory compliance, and managing multidisciplinary teams.

Carlos is recognized for his mastery of Distributed Control Systems and Safety Instrumented Systems. He has conducted numerous Functional Safety Assessments and led critical risk assessments using methods such as HAZOP, LOPA, QRA, and FSA. He has also been responsible for implementing critical safety programs following the Safety Life Cycle as per the IEC-61511 / 61508 Standards.

In addition to his professional work, Carlos is an active educator. He is a professor for the ISA Course "Expert in Functional Safety" and facilitates international training programs, training engineers and safety professionals worldwide on topics such as safety lifecycle management, instrumentation, control, industrial electricity, and the application of international safety standards. His educational contributions have shaped a new generation of professionals capable of managing safety in high-risk environments.