

Obtain your personal certification in IEC 61511

Functional safety training on safety instrumented design for the process industry



Course overview

This three-day training provides a comprehensive overview of the IEC 61511:2016 and ANSI/ISA 61511:2018 standards for the process industry. The complete safety life cycle of IEC 61511 will be discussed by industry experts, and practical examples and exercises will be provided.

Training topics

- Overview of IEC 61508 versus IEC 61511
- Historic incidents and the history of the development of standards
- Functional safety definition and management according to IEC 61511
- Terms and concepts of functional safety
 - Safety instrumented system (SIS) and function (SIF)
 - Safety integrity level (SIL)
 - Reliability and failure rates
 - SIF architectures (1oo1, 1oo2, 2oo3, etc.)
 - Hardware fault tolerance (HFT) and safe failure fractions (SFF)
 - Probability of failure on demand (PFD) and per hours (PFH)
- Mitigation and prevention levels of hazardous events
 - Risk reduction with prevention layers
- Process hazard and risk analysis
 - Risk management
 - Hazard and operability analysis (HAZOP)
 - Fault tree analysis (FTA)
- Allocation of SIL levels to SIFs
 - SIF identification
 - Risk graph and layers of protection analysis (LOPA)
- SIS safety requirements specification (SRS)
 - SIF requirements for hardware and application programs (AP)
- SIS design and SIL verification
 - SIL verification by systematic capability, architectural constraints and PFD
 - How to choose the right instruments
- Installation, commissioning and validation requirements
- Operation, maintenance, modifications and decommissioning
 - Requirements to operate and maintain the SIS
 - Proof testing and inspection for every SIF
 - Maintenance override switch (MOS) structure
- Functional safety assessment (FSA) and re-verifications



Optional UL Certified Functional Safety Professional Exam

Participants who complete all three days of training are eligible to take a two-hour certification exam on the morning of the fourth day. Those who pass the exam are individually certified as a *UL Certified Functional Safety Professional (UL-CFSP)* in IEC 61511.

Upon the successful completion of the *UL-CFSP* exam, participants will receive a certificate and badge that they can use to demonstrate their competence in IEC 61511 functional safety. The certification is valid for three years, after which individuals may recertify.

Why choose UL?

From materials testing to supply chain management, new energy options to security and interoperability solutions, leverage our expertise and insights to navigate the global regulatory landscape and bring your products to market.

Our global network of technical experts and state-of-the-art facilities, along with our long-standing relationships with regulatory authorities, partner laboratories and industry technical leaders, help manufacturers gain the compliance credentials they need to compete in a more complex global supply chain.



Objectives

Upon successful completion of this workshop, you will be able to:

- Understand the contents and intent of IEC 61511:2016 and ANSI/ISA 61511:2018
- Provide evidence of competency of functional safety for SIS design as required by IEC 61511
- Approach different studies of hazard and risk evaluation, such as HAZOP and hazard identification (HAZID)
- Allocate SILs using LOPA and risk graphs
- Design SIS with risk reduction as required by a risk evaluation study according to IEC 61511

Target audience

- Automation and instrumentation engineers
- Process engineers and plant project leaders
- Health, safety and environment (HSE) engineers
- Engineering, procurement and construction (EPC) engineers
- SIS manufacturers and integrators
- Process plant end user engineers and technicians
- Original equipment manufacturers (OEMs) and third parties



Knowledge you can trust – Our experienced staff will support you from the initial design stage of product development through testing and production. Our experts can assist you in understanding the certification requirements for your specific markets.



Speed and efficiency – Our cost-effective systems and state-of-the-art facilities cut through the red tape and help accelerate your time to market.



Single-source provider – We meet virtually all of your compliance needs and, by bundling safety, performance and interoperability services, also help save you valuable time and money.



Global reach and access – Our global network of expert engineers helps you understand the various national and global requirements for your specific market application.

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