

Functional safety and SIL for Safety Systems

Training course with exam and certification.
A course for engineers, professionals and specialists.



SafetyAdvisor in cooperation with RISKNOWLOGY

SAFETYADVISOR





Course description

This Functional Safety and SIL for Safety Systems course with exam and certification and focuses on functional safety aspects for any industry dealing with safety systems according to IEC 61508 and or IEC 61511.

The main objective of this course is to give engineers, professionals and specialists involved in safety systems the opportunity to learn the fundamentals of functional safety and the requirements of the functional safety standards IEC 615108 and IEC 61511. A second objective is to give anybody attending the course the opportunity to certify their knowledge through an exam.

The leaders in industry know how to identify and manage their risks. They start by training their staff.

Contact and registration

Local contact: Safety Advisor OY
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Email: tarja.katajala@safetyadvistor.fi

Event details:

Dates: 4-8 May 2020
Exam date: 8 May 2020
Location: TAPAHTUMATALO Bank, Helsinki
Class size: Maximum 20 participants

Timings

Day 1-4: Door opens at 8:30, course runs from 9:00 until 16/17:00.
Exam day: Door opens at 8:30, exam takes place from 9:00 until 13:00.



Why professionals need to be certified?

The functional safety standards require that anybody involved in safety system lifecycle activities shall be competent to carry out the activities for which they are accountable. Use this course with examination and certification to prove to yourself, to peers, and to management that you are competent in the field of functional safety.

Persons, departments or organisations involved in safety systems life-cycle activities shall be competent to carry out the activities for which they are accountable (61508/61511)

Who should attend?

Any professionals working directly or indirectly in their workplace with Functional safety and SIL for Safety Systems.

Thank you for an excellent course. It was one of the best trainings I think I've ever attended. Functional safety is present every day in our work here in Borealis and now all those numerous company procedure documents make a lot more sense as they are clearly based on standards such as IEC61508/61511.

L. Lötjönen, Borealis, Finland

What will you get?

All attendees will receive:

- The course material
- White papers on functional safety topics
- Safety Passport®
- Upon successful completion of the course:
- A Risknology or TÜV SÜD certificate,
- A knowledge certificate for those that pass the exam



Table of contents

Day 1

- Introduction to functional safety
 - Business case for functional safety
 - Important laws
 - The IEC 61508 and IEC 61511 standards
 - Random, common cause and systematic failures
- Functional safety management:
 - Life cycle concept
 - Competency
 - Verification
 - Validation
 - Assessment
 - Audit
 - Documentation
 - Important FSM procedures
 - Modifications
 - Configuration management

Day 3

- Hardware design
 - Hardware lifecycle
 - Energize vs de-energize
 - Low demand, high demand, continuous mode
 - Target failure measure (PFDavg, PFH)
 - Redundancy
 - Diversity
 - Voting
 - Hardware fault tolerance
 - Type A, Type B
 - Diagnostic tests
 - Proof tests
 - Safe failure fraction
 - Architectural constraints according to IEC 61508 (route 1h, 2h)
 - Architectural constraints according to IEC 61511

Day 5

- Exam

Day 2

- Hazard & Risk Analysis:
 - Hazard identification
 - Hazard and risk analysis
 - Risk reduction
 - HAZID, FMEA, FTA, HAZOP, ETA, LOPA, Risk Graph, Risk Matrix
 - Safety function definition SLATS
 - Safety requirements specification
- Planning the safety system
 - Planning for end users, integrators, and realisation of safety systems
 - Safety plan,
 - Verification plan,
 - Validation plan,
 - Assessment plan
 - Audit plan
 - Safety requirement specification

Day 4

- Hardware reliability
 - Reliability modelling
 - Simplified equations
 - Failure data
 - PFD calculation
- Software design
 - Software lifecycle
 - Embedded software
 - Application software
 - Utility software
 - Fixed programming languages (FPL)
 - Limited variability languages (LVL)
 - Full variability languages (FVL)
 - Software architecture
 - V-model
- Operation and maintenance
 - Installation and commissioning
 - Safety validation
 - Operation, maintenance and repair
 - Modification and retrofit
 - Maintenance override



Knowledge certification

This course comes with an exam and personal knowledge certification.

- Functional Safety Specialist, Engineer (TUV) certificate for those that obtain 60% or higher on the exam
- Functional Safety Professional (TUV) certificate for those that obtain 75% or higher on the exam
- Functional Safety Specialist certificate with distinction for those that obtain 85% or higher on the exam
- Certificate of Attendance for those that do not pass the exam



How to achieve certification?

In order to achieve the knowledge certificate associated with this Functional Safety and SIL for Safety System training course the applicants need to meet the following criteria:

1. Fill out the Application Form
2. Have 6 years of experience in the process industry. It is possible to receive the following education credit:
 1. Bachelor degree: 2 years
 2. Masters degree: 3 years
 3. PhD degree: 4 years
3. Have 2 references that can confirm the experience
4. Participate at least one time this training
5. Pass the associated exam



Risknowlogy Safety Passport®

The new industry standard

So far over 2 700 Safety Passports have been issued by Risknowlogy to respected professionals all over the world. The Safety Passport has become the industry standard. As such it demonstrates its holder's commitment to actively maintaining their competency through education, training and updates.

The Safety Passport is a publicly accessible competence record of: all certifications in risk, reliability and/or safety related courses – offered by Risknowlogy and/or other recognised industry organisations.

Manager asks: “What if we spend money on training our employees and they leave?”
HR replies: “What if we don't and they stay?”

Testimonials

Everybody should get this overview of functional safety and apply that “culture” to their organisation. The course was very good. Right pace, very smooth style, good dive ins after the questions into the topic (if required).

A. Al Jabri, Occidental, Oman

It was a very educational course and hope to really enjoy the benefits of this in the future. The trainer was very competent and knows what he is talking about. Every colleague should follow this course, if only it was to understand FSM better.

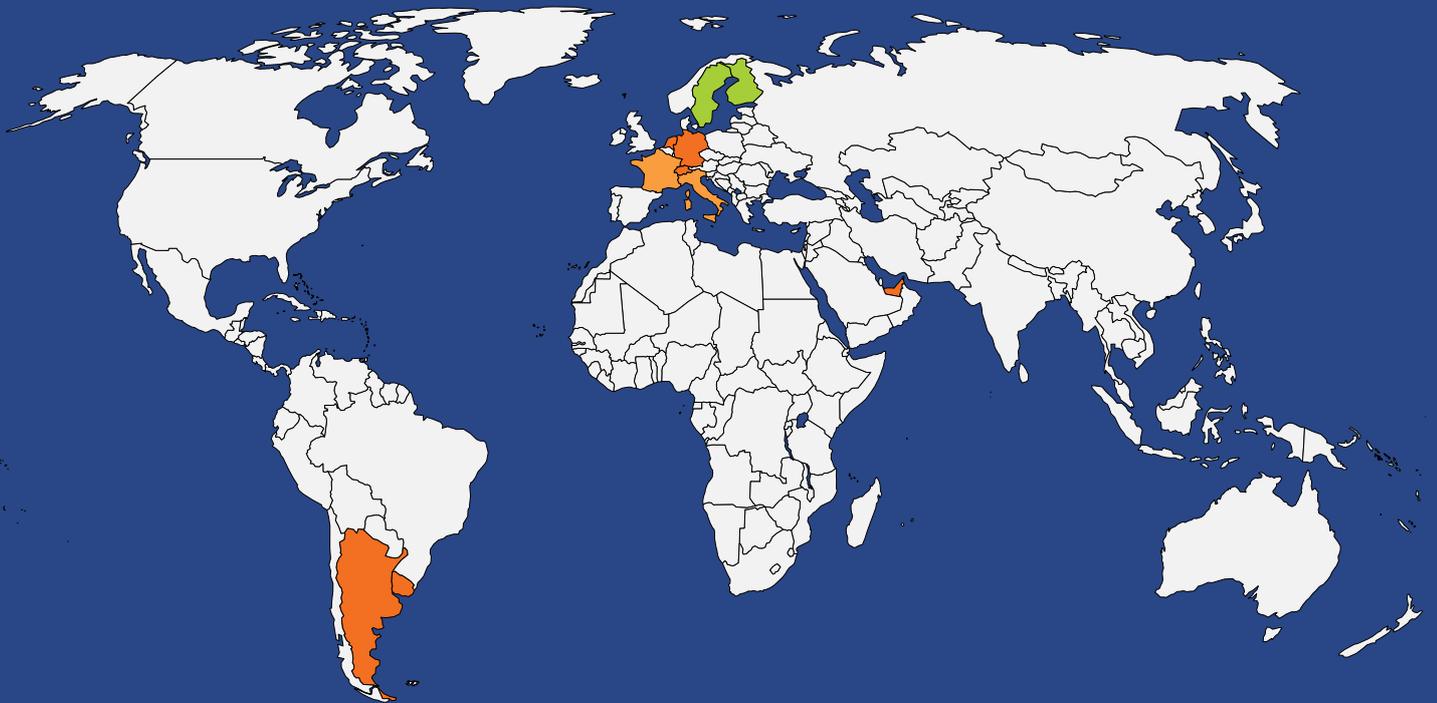
M. de Kok, Rütgers Resins, Netherlands

Every colleague should follow this course to attain more knowledge and awareness on functional safety.

R. Mulder, Lloyds Register



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Family owned business



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