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TRAINING COURSE

# T152 TÜV Rheinland functional safety training program

Operation and Maintenance  
Functional Safety Technician



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# T152 TÜV Rheinland functional safety training program

## Operation and Maintenance Functional safety technician

### **Safety Instrumented Systems (SIS) training**

ABB is an accepted course provider of the worldwide acknowledged TÜV Rheinland functional safety training program.

### **Course goal**

The goal of this course is to learn the principles and requirements of functional safety in the context of operation and maintenance of Safety Instrumented Systems (SIS) according to IEC 61508 / IEC 61511. Course attendance is open to all interested parties. Achieving the threshold mark for the examination and meeting the prerequisites as detailed below will result in the candidate obtaining a TÜV Rheinland FS technician certificate.

### **Learning objectives**

Upon completion of this course, the participants should be able to:

- Describe the principles of functional safety management and the key features of IEC 61511
- Describe the requirements of the safety lifecycle
- Outline the key deliverables from the operations and maintenance safety lifecycle phase, roles and responsibilities
- Understand the key factors used within the SIS engineering and design lifecycle phase
- Understand the requirements for proper inspection, operation and maintenance of installed SIS
- Understand the requirements for management of change and modification of SIS
- Appreciate the role and requirements of highly managed alarms
- Understand the requirements for SIS Cyber security in the operations lifecycle phase

### **Course duration**

The duration is 3 days consisting of 2.5 days of tuition with an examination on the third day.

### **Participant profile**

This training is aimed at those who will be involved in supporting the commissioning, inspection, testing, operation, maintenance, modification and change management of SIS for process plant applications. Candidates are likely to be plant operators, control, instrumentation and electrical supervisors & technicians.

### **Prerequisites for TÜV Rheinland FS technician**

In accordance with the TÜV Rheinland functional safety training program, students shall have:

- A minimum of 2 years' experience in the field of functional safety
- Certificate in a relevant engineering discipline or equivalent engineering experience and responsibilities as certified by employer or engineering institution

### **Certificate**

Participants, who fulfil the requirements, attend the complete training and pass the exam successfully will receive the FS technician (TÜV Rheinland) certificate with an individual ID number. Holders of this certificate will be listed at the TÜV Rheinland website [www.tuvasi.com](http://www.tuvasi.com) 'List of FS technicians'.

**Topics covered:**

- TÜV Rheinland FS training program
- Background on functional safety
- Regulations and safety standards
- IEC 61508 and IEC 61511
- Management of functional safety
- Competency management
- Safety lifecycle phases and planning
- Hazard and risk management
- Safety requirements specification
- SIS design and engineering
- Selection of components and subsystems
- Verification, validation, audit and assessment
- Continuous review and improvement
- Installation and commissioning
- Proof testing strategies and the impact of testing
- Highly managed alarms
- Operation and override procedures
- Inspection and maintenance management
- Modification, change management and impact analysis
- Requirements for cyber security
- Practical exercises

**Course type and methods**

This is an instructor led course with interactive classroom discussions and practical examples of safety system implementation.

**ABB University**

[abb.com/abbuniversity](http://abb.com/abbuniversity)  
[functionalsafetyinsights.com](http://functionalsafetyinsights.com)

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**Course outline**

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**Day 1**

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- Course overview and TÜV Rheinland functional safety training program
- Regulations and safety standards
- The functional safety lifecycle
- Concept of hazard and risk management
- Industry good practice
- SIS design and engineering
- Requirements for operation, maintenance and decommissioning
- Worked examples
- Course knowledge review

**Day 2**

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- Operation and maintenance and the role of the technician
- Planning
- Operational activities
- Maintenance activities
- Modification and Management of Change (MoC)
- Decommissioning
- Partial proof testing
- Worked examples
- Course knowledge review

**Day 3**

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- Highly managed alarms
  - Cyber security
  - Exam overview
  - Examination
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**ABB Limited**

Pavilion 9  
Byland Way  
Belasis Business Park  
Billingham  
Cleveland  
TS23 4EB  
United Kingdom  
Phone: +44 (0)1642 272000  
E-Mail: [contact@gb.abb.com](mailto:contact@gb.abb.com)

**[abb.com](http://abb.com)**

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