

Have you ever asked yourself how to interpret the requirements of IEC 61511?

Do you want to know what Functional Safety means?

Have you ever wondered how to do a HAZOP and LOPA analysis?

Are you uncertain whether your design of your safety instrumented function meets the requirements of IEC 61511?

Do you want to know how to show that a component is systematic capable based on proven in use/prior use?

**Join our training** and learn more about these and other interesting topics regarding IEC 61511.

# DE0105 – Functional Safety Basics according to IEC 61511

## Overview:

If you are working in the process industry and you always wanted to learn the basics of Functional Safety, then this is a tailor-made training for you.

The focus of the training is on the standard IEC 61511, which is mainly aimed at process industries, including the chemical industry, refineries, oil and gas extraction, paper manufacturing, conventional electricity generation and others.

This two-day training delivers a complete and compact overview of the functional safety lifecycle and the associated activities according to IEC 61511. The course reviews Functional Safety Management (FSM) and the overall safety life cycle including Process Hazard Analysis (PHA), Safety Requirement Specification, Design of the Safety Instrumented Function, SIL Verification, Installation, Commissioning, Operation, Modification and Decommissioning.

## Language:

German or English, training material will be in English

## Duration:

2 days

## Location:

exida.com GmbH office  
Prof. Messerschmitt Straße 1  
85579 Neubiberg  
Germany

Alternatively, you can also book this training as In-house training.

## Certificate:

Each participant gets a letter of attendance.

After the end of the 2<sup>nd</sup> day there is a possibility to do the [FSP](#) exam. This is optional and free of charge.

# DE0105 – Functional Safety Basics according to IEC 61511

## Who should attend?

This training is particularly aimed at the following groups:

- Managers who need to know more about functional safety and the standard IEC 61511
- Quality Management Representatives who are responsible for fulfilment of IEC 61511
- Process (safety) engineers, design engineers, control engineers, reliability engineers, application engineers and operators working on the development, testing and operation of safety instrumented systems

## Further Information:

For more information, please contact:

Kerstin Tietel

☎ +49 89 44118232

✉ [kerstin.tietel@exida.com](mailto:kerstin.tietel@exida.com)

# DE0105 – Functional Safety Basics according to IEC 61511

## Agenda:

<p>DE0106 (Day 1)</p> <ul style="list-style-type: none"><li>• Introduction to Safety Instrumented Systems</li><li>• Principles of Risk Management</li><li>• The Safety Lifecycle</li><li>• Process Hazard Analysis (PHA)</li><li>• Consequence Analysis</li><li>• Likelihood Analysis</li><li>• Layer of Protection Analysis (LOPA)</li><li>• Tolerable Risk</li><li>• SIL Target Selection</li><li>• Safety Requirements Specification (SRS)</li></ul>	<p>DE0106 (Day 2)</p> <ul style="list-style-type: none"><li>• Safety Instrumented Systems (SIS) failure</li><li>• From failure rate to SIL</li><li>• Single devices to system</li><li>• Redundant Architectures</li><li>• Requirements to SIF</li><li>• SIF Design and Verification in the Safety Lifecycle</li><li>• SIF Detail Design</li><li>• Operations</li><li>• FSP exam</li></ul>
---	---



## DE0105 – Functional Safety Basics according to IEC 61511

### Content:

In the beginning of the training an overview of the meaning of Functional Safety and all relevant vocabulary is given. The procedures required by the standard for development, maintenance, testing and modification activities are explained as well. The necessary responsibilities of employees, requirements for the competence of the persons involved, organizational aspects and knowledge of legal aspects are also discussed.

The entire life cycle of a technical plant is presented. The training explains the methods recommended by IEC 61511 for the HAZard and OPerability (HAZOP) analysis and the subsequent determination of the Safety Integrity Level (SIL) by means of risk graph and Layer Of Protection Analysis (LOPA) and for extrapolation of the resulting safety requirements, which are documented in the Safety Requirement Specification (SRS).

The overall safety system must be designed in accordance with the requirements of IEC 61511. Therefore, the standard requires measures to be taken against systematic and random failures and measures in relation to fault tolerance. The training considers how it is possible to avoid systematic failures in safety systems. The consideration of “Proven in Use”, “Prior Use” and “IEC 61508 conformance” to assure the systematic capability of the used components is also presented. The calculation of the probability of failures ( $PFD_{avg}$ ) is demonstrated. Hereby architecture, monitoring functions, and tests are considered and the influence on the calculation explained.

Another focus of the training lays on the development of the application program. Therefore a rough overview of the requirements of IEC 61511 regarding the SIS application program is given.

Finally, the training considers installation, commissioning, validation and operation, maintenance, modification and decommissioning as part of the overall safety lifecycle.