Functional Safety

Personal Certification • IEC 61508

Functional Safety Certified Engineer • Coordinator • Consultant • Manager

New technologies and the increasing number of functions within products mean that manufacturers have to develop more and more safety-relevant systems. This not only leads to an increase in the number of electronic components - the components and systems themselves are more complex and requirements as to their safety are becoming more stringent. Safety standard IEC 61508 stipulates that organizations must ensure that persons entrusted with tasks related to functional safety have a sufficient level of competence and also that they are suitably qualified. Since the publication of IEC 61508, therefore, employers have been urgently seeking trained and qualified personnel who can demonstrate their competence and professionalism.

Personal Certification:

As an accredited service provider, we offer you the opportunity to gain the necessary basic and specialist knowledge of IEC 61508 - completely up to date and in-compact form. You get to know all the aspects which are fundamental in order to be able to apply the standard correctly. Theoretical standard contents are presented only to the extent as they are essential for carrying out practical tasks. The relation to practice, along with the concrete explanation of methods and approaches, are paramount.
With training certificates issued by TÜV NORD - which are both highly-respected and officially traceable - you as an individual can show that you possess special skills and knowledge that are not covered by traditional studies of engineering.

TÜV NORD Systems GmbH & Co.KG FSCED

TÜV NORD Systems GmbH & Co.KG FSCCD

TÜV NORD Systems GmbH & Co.KG FSCMD

TÜV NORD – We make the world safer

TÜV NORD

TÜV®

Qualification and competence - two essentials for Functional Safety

Program

We have developed a 3-stage program for you. You can achieve Stage 1 (FSCED), by attending a dedicated three-day workshop which concludes with a written examination. In order to achieve Stage 2 (FSCCD), you must submit a form to us demonstrating that you have at least 2 years practical experience as FSCED. A decision is made regarding FSCCD approval based on an evaluation scheme developed by TÜV NORD Systems. The third stage is FSCMD, which follows two years of practical experience as FSCCD.

FSCED

With your personal FSCED certificate, you demonstrate that you know and understand the basic principles, concepts and objectives of functional safety management. You are able to make effective use of your specialist knowledge and the methods required by IEC 61508 in order to solve problems. Your training and experience mean that you can employ a wide variety of methods and tools, including methods for product and process monitoring.

FSCCD

With your personal FSCCD certificate, you demonstrate your ability to plan, implement and document Assessments based on IEC 61508. Your main task is to evaluate the functional safety of products, and also safety management within projects, by means of such Assessments. You are able to make use of communication and questioning techniques in order to achieve the objective of the audit or assessment.

FSCMD

With your personal FSCMD certificate, you show that you can take on the role of process owner of functional safety management and that you can plan the necessary activities within projects. Within your organization, you are responsible for providing safety proofs and you assess functional safety, in particular ensuring that the safety-orientated safety process is fully integrated and included in safety projects at every stage. You release the technical safety concept and report to the top level management if assessments do not result in release and/or if corrective actions become necessary. In addition, you assess if the qualification of the staff in your organization who are concerned with safety is sufficient.

Prerequisites

In order to receive a certificate for Stage 3, as FSCMD, you must have worked for two years as FSCCD with experience in the area of IEC 61508. In order to finally establish your suitability, TÜV NORD Systems performs a qualification audit in your organization. The auditor makes recommendations in the Audit Report and TÜV NORD Systems makes the final decision regarding approval as FSCMD. If all is found to be satisfactory, the certification body confirms your specialist skills and knowledge with issue of the FSCMD certificate. At all three stages you are entitled to display a TÜV NORD Mark on your business card, with a corresponding ID Number.

Validity of certification

FSCED and FSCCD certifications are valid for three years, renewable for a further three years through attendance at a one-day update workshop, followed by a successful written test. In the case of the FSCMD, a re-audit takes place every three years. This 3-year rhythm encourages certificate holders to undertake continuous professional development.

Our Training Team

Our team consists of experienced trainers with university degrees in engineering. They have many years of experience in the area of functional safety, which enables them to offer optimum theoretical and practical further training. The training courses are extremely well thought out as regards the content and the training methods used, and the material is communicated in an easily understandable and interesting way.

TÜV NORD

Functional Safety

with the safety standard IEC 61508

Four-day Workshop with optional qualification as
Functional **S**afety **C**ertified **E**ngineer **D**evelopment (FSCED)
and FMEDA Workbench Database Tool

New Workshop-Modules in TÜV NORD: We are pleased to announce, a four-day workshop session on the topic of Automotive Functional Safety and the IEC 61508 including the option of examination to become a certified **F**unctional **S**afety **C**ertified **E**ngineer **D**evelopment (FSCED). The workshop will be provided in Augsburg the IEC 61508 standard describes management of Functional Safety as the essential basis for the development of safety-relevant electronics in process industry. Participants who would benefit from this workshop include:

- Product safety and safety management engineers.
- Development engineers engaged in the design and testing of automotive control software, hardware, and systems.
- Managers seeking a better understanding of functional safety of automotive electronic systems and the IEC 61508 standard.
- Quality management professionals engaged in IEC 61508-compliance.

Those attending Days 2 & 3 will also receive the **FMEDA-Workbench database tool**, an excel-based calculation tool, developed exclusively by TÜV Nord for calculating failure rates and metrics in accordance with IEC 61508 part 2. The workshop will take place in 86150 Augsburg. Space is limited to a total of 20 participants. Registration is open until sessions are filled. To register, please fill in the attached form and return to Fax: 0821-450954-4269 or register online on http://www.tuev-nord.de/ by the registration deadline. If you have questions, call 0821-450-954-0 or email *grieger@tuev-nord.de*.

Workshop Agenda

Day 1: Functional Safety Management Workshop

FSM and concept development, from Risk analysis to the functional safety concept, using IEC 61508 concepts

Considerations will be presented for implementing a Functional Safety Management (FSM) system, including tasks faced by both the responsible safety manager and safety coordinators. A general overview of the required processes, quality assurance system, complementary processes in development and extension of supporting processes will be shown. Its aim is to inform responsible persons and management in the development, test and quality departments to the implication of IEC 61508 to the company and its products and processes. A general introduction of the safety process is provided including documentation requirements and the management and technical activities during the overall safety life-cycle phases. The complete concept development phase, from the Risk analysis to the functional safety concept, is presented in practical exercises. Illustrative examples are used to highlight the risk analysis with risk assessment, the item definition requirements and the derivation of functional safety requirements.

Day 2 and 3: System Level and Hardware Level Implementation of IEC 61508 System development, technical safety concept, system and hardware development. Evaluation of Safety Goals and Hardware Architecture using Failure Mode Effect and Diagnostic Analysis (FMEDA)

This workshop addresses the technical concept design of a system and its elements. Knowledge of the relevant interactions is developed in-depth, using illustrations. In addition, the lecture describes safety-oriented hardware development processes including the architectural constraints, documentation requirements and development procedures on hardware safety integrity. IEC 61508 presents an approach to hardware assessment and requires an evaluation of the residual risk of violating the safety function due to failure associated with hardware element single-point and residual faults. Under consideration of the FMEDA methodology, required safety demonstration methods and the calculation of the PFD, PFH value and SFF are presented. In this analysis, coverage of safety mechanisms is considered. The workshop provides a unique FMEDA-Workbench database tool developed exclusively by TÜV NORD. The tool has a build in database for FIT-rates and failure distribution according the reliability standard IEC 62380. A laptop with Microsoft Excel is required.

Day 4: Software Level Implementation of IEC 61508

Safety Oriented Software Development

Beyond the demands of previously existing software quality standards IEC 61508 establishes further software-related requirements focused on Functional Safety. The workshop presents the additional demands including the relevant techniques and measures corresponding to the relevant SIL made on software development and their practical implementation in an illustrative manner. It is a briefing for all SW oriented personnel including those dealing with the validation of tools. Beginning with the management process for safety software development, a concrete example to the necessary requirement specification will be worked out. Techniques and measure for safety software development and use of support tools (tool qualification). Each of the SW development phases will be discussed including specific requirements for implementation and testing. Validation activities and documentation features will be explained in detail according to the IEC 61508.

Day 5: Qualification Exam for Functional Safety Certified Engineer Development (FSCED)

Interested participants can apply for the FSCED qualification test. Attendance of all 4 workshops is a prerequisite. After successful completion of the test, TÜV NORD will provide FSCED certification. The qualification is valid for 3 years and can be extended another three years after attending a follow-up workshop and successfully passing a repeated test. Further certification as a Functional Safety Certified Manager Development (FSCMD) can be achieved by individuals demonstrating work on relevant safety projects for at least the past 4 years and successfully passing a qualification audit by TÜV NORD.

TÜV NORD Systems GmbH & Co. KG
Functional Safety
Halderstraße 27
86150 Augsburg
Tel.: +49 0821 450954 4284
fusi@tuev-nord.de
www.tuev-nord.de

TÜV NORD