

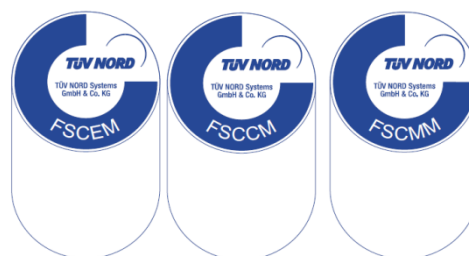
Personal Certification • ISO 13849, IEC 62061, Machinery Directive 2006/42/EG

Functional Safety Certified Engineer • Coordinator • Consultant • Manager

In the area of machinery technology, mechanical parts are increasingly being replaced by electronic components or are controlled and monitored by electronic means. This not only leads to an increase in the number of electronic components contained in machinery, but also to ever more complex networking, interaction and interlinking and therefore more stringent safety requirements. Safety-relevant functionality is absolutely essential within modern machine technology. The safety of plant and machinery is fundamentally dependent on full knowledge and correct application of safety standards such as ISO 13849, IEC 62061 alongside efficient implementation of Machinery Directive 2006/42/EC. Companies must ensure that their employees who are charged with functional safety possess a sufficient level of competence and are suitably qualified.

Personal certification:

As an accredited service provider, we offer you the opportunity to acquire the specialist competence and necessary knowledge of Machinery Directive and Machinery Safety Standards ISO 13849, IEC 62061 and in a compact and current form. You will get to know all the aspects which are important in order to be able to apply the Directive and Standards correctly. The theoretical content of the Standards is only presented to the extent needed for completion of practical tasks; the emphasis is on practical application, use of specific methods and description of specific procedures. Our personal certificates enable you to demonstrate - in a form that is clearly recognisable and traceable - that you possess special skills and knowledge not generally included in traditional engineering studies.



TÜV NORD – We make the world safer

Functional Safety requires qualification and competence

Programme

We have developed a 3-stage personal certification programme to fit your individual needs. You can acquire the initial qualification as Functional Safety Certified Engineer Machinery - FSCEM when you successfully complete an examination based on a three-day training course. The examination is in written form and relates to the material taught and discussed in the 3-day Workshop. In order to achieve the second level, as Functional Safety Certified Coordinator Machinery FSCCM, you must be able to demonstrate at least 2 years practical experience as an FSCEM and submit corresponding documentation. The decision as to your suitability to pass to the second level is based on an evaluation scheme developed by TÜV NORD Systems. The third level is that of Functional Safety Certified Manager Machinery FSCMM, which can be achieved following two further years of work as an FSCCM.



FSCEM

With your personal FSCEM certificate, you demonstrate that you know the basic principles, concepts and objectives of the Machinery Directive (MD) and of the Machinery Safety Standards. You can make effective use of your expert knowledge and competence in order to solve problems and can implement and fulfil the requirements of the MD and the Standards fast and efficiently.

FSCCM

With your personal FSCCM certificate you demonstrate your competence for planning, implementation and documentation of functional safety based on ISO 13849 and IEC 62061. Your main task consists of the assessment of functional safety of machinery design and construction and of individual safety components.

FSCMM

With your personal FSCMM certificate, you demonstrate your competence to act as a process owner for machinery safety and to plan activities within projects. Inside the company, you are responsible for the proof of safety needed for CE marking, and you assess functional safety – in particular correct implementation of safety-orientated development processes within overall corporate systems and procedures. You release the results of the risk assessment according to DIN ISO 12100 along with the resulting technical safety concept, and draw up the Declaration of Conformity as specified by the Machinery Directive. In addition, you decide if the persons entrusted with safety-related work are sufficiently qualified.

Prerequisites

In order to acquire the third-level certificate as FSCMM you must have gathered 2 years practical experience as an FSCCM in connection with the Machinery Directive and Machinery Safety Standards. In order to establish your suitability, TÜV NORD Systems will perform a qualifying audit in your company. A recommendation regarding approval as FSCMM is made in the Audit Report followed by a final decision by TÜV NORD Systems. If the outcome is positive, the Certification Body confirms the qualification by issuing the FSCMM certificate. At all three stages you can display a TÜV NORD Mark on your visiting card, with a corresponding ID Number.

Period of validity

The two certifications as FSCEM und FSCCM are valid for three years, and can be extended for a further 3 years through attendance at a 1-day Update Workshop with written examination. In the case of FSCMM certification, a re-audit takes place every three years. The 3-year cycle motivates the certificate owner to undertake ongoing further training.

The training team

The training team consists of experienced degree-level engineers with many years of experience in the field of functional safety, who are able to guarantee best-possible training and further training on both the theoretical and practical levels. The course material has been carefully developed as regards technical content and effective learning and is communicated in a way which is both interesting and easy to understand.

Content to the three day Workshop

New Workshop Modules at TÜV NORD Systems: we are very pleased to announce a three-day Workshop on **Functional Safety for the Machinery Industry**, based on safety standards ISO 13849, IEC 62061 including the option of an examination to become a certified **Functional Safety Certified Engineer Machinery (FSCEM)**. When implementing new and complex concepts in machinery technology, aspects of functional safety and the resulting technical requirements for protection of persons and plant according to the new Machinery Directive (MD) must increasingly be taken into consideration. Product reliability and functional safety are required by law and monitored by the supervisory authorities. The corresponding conditions must be fulfilled without fail by manufacturers of both machinery and machine safety components.

This Workshop is particularly aimed at the following groups:

- Engineers from the areas of machinery design and construction, product safety and safety management.
- Development engineers working on development of machinery safety components.
- Managers involved in work with functional safety and the Machinery Directive.
- Quality Management Representatives who are responsible for fulfilment of the Machinery Directive.

Those taking part in the first day of the Workshop also receive the **HARA ISO 12100 Workbench Tool**, an Excel-based **Tool** developed exclusively by TÜV NORD for performance of risk assessments according to ISO 12100. Attendance is limited to 20 participants. It is possible to register until the Workshop is fully booked. *In order to book, please either fill in the attached form and Fax to us at +49 (0) 821-450954-4269, or you can register within the official registration period at <http://www.tuev-nord.de/>.*

Workshop Content


Module 1: Legal aspects

The aim of Training Module 1 is to provide all information regarding implementation of the Machinery Directive and CE marking for the relevant management and staff from development, testing and quality departments. First there is a general introduction to the legal consequences arising from the Machinery Directive, including documentation requirements and management and technical activities within the entire safety life cycle of a machine. Following this, the principles and terminology of functional safety are considered and practised using the HARA ISO 12100 Workbench Tool.

Module 2: CE marking procedure and Technical Documentation required

In Training Module 2, the contents of the Technical Documentation required in accordance with Annex V and VI of the Machinery Directive are explained.

There is a detailed and clear presentation, including the argumentation regarding the necessity for risk reduction and type of risk reduction required to prevent the hazards which can originate from a machine or subsystem. In addition, examples are considered which illustrate, step by step, the conformity assessment procedure, CE marking (Annex III), EC Declaration of Conformity for complete and functional machinery (Annex II) and for individual safety components that are placed on the market. The Manufacturer's Declaration (Annex II B) for partly completed machinery and machine safety components, including the documentation required by the standard, is also covered. This module also includes information on the correct procedure to follow for retrofits and conversion of old machinery and equipment.



Module 3: Basic principles of functional safety and introduction to Safety Standards ISO 13849, IEC 62061

In Training Module 3, basic principles of functional safety are considered and the contents of the safety standards relevant to machinery technology are presented. The links between SIL, PL and SIL_{CL} are also explained. Calculation and design of safety loops are evaluated based on the previously-performed risk assessment and use of the IFA "SISTEMA" software assistant, and are explained with the help of examples. In addition, it is shown how the MTTFD value of electronic subsystems is determined using FMEDA, taking diagnostic measures into consideration. The Workshop also covers the calculation of electromechanical components considering average operation and cycle times, based on easy-to-follow practical examples.

Finally, there is a question session to prepare for the qualification examination

Module 4: Qualification examination to qualify as FSCEM

Participants who wish can register for the FSCEM qualifying examination. The prerequisite for this is attendance at all three Workshop Modules. Following successful completion of the examination, you will receive your personal FSCEM Certificate from TÜV NORD Systems. The examination questions are set in German and English and can be answered in either language. The training lectures and presentations are in German. The certification is valid for three years and can be extended for a further three years through attendance at a one-day Update Workshop with one-hour renewal examination. In order to undertake advanced certification as a Functional Safety Certified Coordinator or Consultant Development (FSCCM) or Functional Safety Certified Manager Development (FSCMM), you must be able to demonstrate at least two or four years of practical experience based on relevant safety products and have successfully completed a qualification audit performed by TÜV NORD Systems.