



Functional Safety
with the safety standards ISO13849 and IEC 62061
with reference to the Machinery Directive 2006/42/EG
Three-days Workshop with optional Qualification as
Functional **S**afety **C**ertified **E**ngineer **M**anager (FSCEM)

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 **F**unctional **S**afety **C**ertified **E**ngineer **M**achinery (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 **f**unctional **s**afety 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. The workshop will take place in 86150 Augsburg, Germany. 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 bpfuff@tuev-nord.de.



Workshop-Content

Module 1: Legal aspects

Legal framework and organizational requirements

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

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.



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.