

The integrated approach to safe systems

# TÜV NORD CERT – Basic principles and implementation of functional safety in electrical, electronic and programmable electronic systems



All developers, installers and operators of safety-critical technical plant and equipment are obliged to base their activities on the current state of technology, to reduce risks as far as possible and to bring them within a tolerable range.

TÜV NORD CERT helps companies to fulfil these requirements and to further increase the safety of their products. This is based on a wide service spectrum, an integrated system approach and consideration of the complete safety installation by means of a phased model. This includes, among others, testing services during product development and also methods for risk minimisation in accordance with generic

standard IEC/ DIN EN 61508 and the specific standards regarding functional safety which derive from it.

In detail, TÜV NORD CERT provides support during the development process as well as in the testing and certification of safety-relevant products in the area of electrical/ electronic/programmable electronic systems (E/E/PE systems), offering the following services:

- System assessment
  - Risk analyses, categorisation referred to risk graph (ASIL/SIL/PL)
  - Review of specifications and safety requirements
  - Concept and design analyses
  - Verification and validation
- Assessment of software and tools
  - Testing of development and other tools and communication protocols
  - Architecture analyses
- Assessment of hardware
  - Probabilistic analyses
  - Failure effect analyses
- Certification
  - Certification of components and systems
  - Certification of safety processes
  - Award of test marks for systems, semiconductors, development tools and processes
- Further services
  - Moderation of hazard and risk analyses
  - Tests during the development process and assessments of safety-orientated hardware and software
  - Concept evaluation (preliminary check)
  - Functional Safety Management (FSM)



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Certification

- Safety, reliability and availability analyses
- Conformity assessments in accordance with the relevant safety standards
- Workshops on functional safety and individually-designed in-house information days on the requirements of the relevant standards

Standards covered include the European Machinery Directive 2006/42/EC with the associated harmonised standards EN ISO 13849 and IEC/DIN EN 62061, and also further standards from the area of Functional Safety – IEC/DIN EN 61511, IEC/DIN EN 61508, ISO 26262 and DIN EN 50495.

### Target groups for the services

The services are directed towards manufacturers of safety-orientated components, subsystems and systems in the areas of automotive (including electromobility), aviation, lifts and also power plants, machinery, medical and process technology.

### Benefits of the services

The services offer support in the fulfilment of the duty of care and also ensure correct application of the Standard, contribute to raising safety levels and help to minimise residual risks. Standard IEC/DIN EN 61508 and the further standards mentioned above can be integrated into existing quality management systems in the most advantageous way possible. Implementation of the rules and regulations contained in the standards provide a reliable basis for decision making, amongst others with regard to safety structures, testing procedures and tools. Development outputs can be verified at an early stage, whilst development times and costs can be reduced. In addition, certification by TÜV NORD CERT enhances image and raises company profiles in the competitive market.

### Are you interested?

Please send us your response by fax.

We are looking forward to hearing from you.

### Our know-how for your success

TÜV NORD CERT is a well-established and reliable partner for inspection and certification services throughout the world. Our experts and auditors have extensive knowledge based on experience and are in general permanently employed by TÜV NORD. This guarantees independence and neutrality and also means that we can offer continuity in supporting our clients. The benefit to you is clear: our auditors accompany and support the development of your company and provide you with objective feedback.

### The route to the certificate



Yes, I am interested in principles and implementation of functional safety. Please contact me.

Sender (Please use block capitals)

Company .....

Postcode/Town .....

Mrs./Mr. ....

Phone .....

Position .....

Telefax .....

Street, No. ....

E-mail .....

TÜV NORD CERT GmbH

Tel. : +49 (0) 511 9986-1222

Fax: +49 (0) 511 9986 69-1900

technology@tuev-nord.de

You can find further information and our subsidiaries at

[www.tuev-nord-cert.com](http://www.tuev-nord-cert.com)

Full range of accredited services: [www.dakks.de/en](http://www.dakks.de/en)

