Programmable Electronic (ASICs, FPGAs, CPLDs) in Safety Technology.

Development of Programmable Electronic according to IEC 61508.

Seminar	2 Termine verfügbar	Teilnahmebescheinigung
Präsenz / Virtual Classroom	8 Unterrichtseinheiten	Online durchführbar

Seminarnummer: 07279

Stand: 13.11.2026. Alle aktuellen Informationen finden Sie unter https://akademie.tuv.com/s/07279

ASICs, FPGAs, CPLDs are components used in almost all safety-related applications.

The current version of the IEC 61508 considers this development and defines requirements for fault avoidance relating to the design of safety-related components. Knowing and understanding the requirements of IEC 61508 and how they are applied to achieve functionally safe components is therefore essential.

The normative requirements for the development of ASICs, FPGAs, CPLDs in safety-related applications are presented and discussed in detail. Various options of measures and techniques for fault control are shown.

All sections are covered, which are necessary to develop programmable electronic for safety-related applications and how they can be applied in practice.

Nutzen

- You will get a good overview of the standard's requirements for the specific development of ASICs, FPGAs and CPLDs
- Examples and exercises will be presented.

Zielgruppe

Engineers responsible for developing safety related components, using programmable electronics (ASIC, FPGA, CPLDs) in safety related operations.

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Voraussetzungen

Basic knowledge of the standard IEC 61508.

Inhalte des Seminars

Amendments in IEC 61508:2010
Management of Functional Safety

- Safety - Plan
- Verification and Validation
- Documentation

Fault avoidance

- Life cycle phases
- General requirements
- Tool requirements
- Measures and techniques for fault avoidance
- Implementation of test structures
- Requirements to the production
- Aging

Fault control

- Differences between µC and ASIC based systems
- Requirements for architecture
- Fault models
- Techniques for fault control
- Implementation of test structures
- Examples for diagnostic and tests
- Exercise and example for fault control

Requirements for On-Chip Redundant

- Measures to avoid mutual interferences
- Additional requirements for on-chip redundancy
- Determination of common cause failures

Safety related parameters

- PFD / PFH calculation and estimation of failure rates
- Distribution of fault values in a design

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Detailed example for measures of fault control

- Application of various measures for fault control

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