

Safety Analyses in the Context of ISO 26262

1 day

Date/Start	Location	Language
Mar 3, 2023/ 9 a.m. CET	Online Registration	English

Inductive and deductive safety analyses play an essential role within the ISO 26262 safety life cycle. Qualitative analysis methods are used to identify failures whereas quantitative methods are utilized to predict the frequency of failures.

This one-day training class introduces the fundamentals of common safety analysis methods such as FMEA, FMEDA, and FTA and discusses the role of these methods in the development of safety-related E/E systems as per ISO 26262.

Target Audience

This training class is designed for automotive professionals (safety engineers, safety managers, system, HW and SW developers, engineering team leads, and managers) involved in the development of safety-related automotive E/E systems as well as anyone interested in learning about safety analyses techniques used in the automotive domain.

Highlights

- Classification of analysis methods (inductive vs deductive, qualitative vs quantitative)
- Common safety analysis methods
- Failure Modes and Effects Analysis (FMEA)
- Failure Modes, Effects, and Diagnostic Analysis (FMEDA)
- Fault Tree Analysis (FTA)
- ISO 26262 hardware metrics (SPFM, LFM, PMHF)
- Combining safety analysis methods
- Role of safety analyses in the ISO 26262 safety life cycle

Languages

Available in English and German

Formats

 **Icon On Site Training** known

Open-enrolment Trainings
at one of our locations

 **Icon Online Training** known

Virtual Classroom Trainings

wherever you are

Icon In-house Training

In-house Trainings

online or in-house

More Details on Formats and Locations

Learning Objectives

By the end of this course, you will:

- Be able to recall important safety analysis methods
- Understand the characteristics of inductive / deductive and quantitative / qualitative analysis methods
- Know important reliability parameters (e.g. probability of failure, failure rate) and hardware metrics (SPFM, LFM, PMHF)
- Have a deepened understanding of important safety analysis methods such as FMEA, FTA, and FMEDA
- Have hands-on experience with fault tree construction and analysis
- Know important objectives and requirements of ISO 26262 for conducting safety analyses during system, HW and SW development
- Understand why multiple safety analysis methods need to be combined for higher ASILs
- Recall the relationships between safety analyses and other ISO 26262 safety activities

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Our Trainers



Agenda

Day 1

Safety Analysis 101

- Goals and objectives

- Common (and less common) analysis methods
- Classification of analysis methods
- Inductive vs deductive methods
- Qualitative vs quantitative methods
- Reliability parameters and HW metrics

Failure Modes and Effects Analysis (FMEA)

- History
- FMEA types: design FMEA (DFMEA) vs process FMEA (PFMEA)
- Systematic DFMEA procedure
- Supplemental FMEA for Monitoring and System Response (FMEA MSR)

Failure Modes, Effects, and Diagnostic Analysis (FMEDA)

- History
- Classification of random HW failures
- Diagnostic measures and diagnostic coverage
- ISO 26262 HW architectural metrics (SPFM, LFM)
- FMEDA procedure
- Example

Fault Tree Analysis (FTA)

- History
- Systematic FTA procedure
- FTA patterns
- Cut sets
- Hands-on exercise
- ISO 26262 PMHF metric

Combination of Analysis Methods

- Combining FMEA and FTA

Safety Analyses According to ISO 26262

- Objective and requirements as per ISO 26262-9
- Safety analyses in the safety life cycle