

## WB06.2 ISO 26262 - Hardware safety analysis (FMEDA) using the IQ-Software

- **Brief introduction to quantitative safety analysis according to ISO 26262: Analysis of single-point and multiple-point failures (note: detailed introduction in seminar WB06.1)**
- **Important terminology and procedures: ASIL, SPFM, LFM, PMHF**
- **Tool-assisted calculation of Functional Safety metrics and comparison of actual/target performance**
- **Consistent, systematic analysis of the item from FMEA to FMEDA and to fault tree analysis (FTA)**
- **Modelling of safety mechanisms (diagnoses) and their malfunctions (latent failure, false failure)**
- **Practical implementation of a Functional Safety project using the training example of "low beam light"**

Systems with electrical and/or electronic components that carry out safety functions are to be assessed with regard to safety aspects (so-called *hardware safety analysis*). For this purpose, you need to create a FMEA (often a System FMEA). Depending on the ASIL classification of the safety goal, you need to additionally calculate the quantitative parameters of the random hardware failures (SPFM, LFM, and PMHF) and verify the compliance with the required target values.

In this webinar, you will be presented an IQ Software procedure using the example of "low beam light" to use the already modelled system behavior (function and failure nets) from your (System) FMEA to calculate the Functional Safety (FMEDA). Furthermore, you will learn how to use the single-point failures from the FMEA analysis as the starting point of a fault tree analysis (FTA). All three analyses (FMEA, FMEDA, and FTA) are based on a database. Thus, you avoid redundant data management and tool disruption.

### **Technical requirements:**

Inform yourself conveniently from any location about the advanced filter functionalities of the IQ Software and save travel expenses/time. To do this, take part in our online webinar. All you need is an Internet-capable computer with a browser and a headset (VoIP) or a telephone (audio).

💡 EVERY PARTICIPANT RECEIVES A TEMPORARY TRAINING LICENSE FOR THE IQ SOFTWARE FOR THE WEBINAR. A TECHNICAL CHECK WILL BE CARRIED OUT IN ADVANCE TO ENSURE THAT EVERYTHING RUNS SMOOTHLY. DURING THE EXERCISES WE RECOMMEND YOU TO WORK WITH TWO MONITORS.

### **Quality promise: Not just an online lecture**

As with our classroom training courses, this webinar will not only provide you with knowledge, but will also give you time to practice and answer your questions individually. Therefore, each thematic block is followed by an exercise. You can ask the trainer individual questions at any time via chat or hand signals.

💡 THE WEBINAR IS ACCOMPANIED BY A TRAINING DOCUMENT, WHICH YOU WILL RECEIVE IN ADVANCE AS PDF.

### **Live, no recording!**

The webinar is conducted live by an experienced APIS trainer.

### **The Webinar Concept: Distributed Sessions instead of endless loops**

In contrast to classroom training, we have the advantage of training at a time when you have the best concentration. For this reason, the webinar is spread over two mornings from 8:30 a.m. to 12:30 p.m. The breaks will be individually arranged in the group.

### Details of the Webinar

💡 In collaboration with our partner TÜV-Süd, we offer the webinar *Functional Safety according to ISO 26262* in two blocks (*ISO 26262-5: Theory* and *ISO 26262-5: Practice using the IQ-Software*). You can book the blocks separately or as a package at a discount price.

WB06.1: ISO 26262 - Introduction to the hardware safety analysis

WB06.2: ISO 26262 - Hardware safety analysis using the IQ-Software

<b>Target group</b>	All participants in a Functional Safety project, who have to analyze their item systematically for single-point and multiple-point failures and calculate the quantitative parameters according to ISO 26262.
<b>Prior knowledge</b>	Knowledge of standard ISO 26262 (in particular part 5). Basic knowledge of operating the APIS IQ-Software. Such knowledge is imparted e.g. in seminar <i>Two-in-One (WB03)</i> .
<b>Webinar duration</b>	2 mornings: 8:30 a.m. to 12:30 p.m.
<b>Webinar fee</b>	Only <i>WB06.2</i> (2 days): net 660 € or <i>WB06.1</i> and <i>WB06.2</i> in one package (5 days): five-day webinar at the package price of net 2,145 €. You save about 5 percent compared to booking both webinars separately.

<b>Webinar content and schedule</b>	<i>2 morning sessions each from 8:30 a.m. to 12:30 p.m.</i>
<b>Session 1</b>	<ul style="list-style-type: none"> <li>• Brief introduction to ISO 26262-5: Important terminology and procedures of the hardware safety analysis</li> <li>• Step-by-step development of example "low beam light" from the S-FMEA to the FMEDA to the fault tree analysis</li> <li>• Presentation of calculation methods for Functional Safety in the IQ-Software</li> <li>• Input of safety goals including ASIL and target values (SPFM, LFM, PMHF)</li> <li>• Creating the E/E components with actual values in FMEDA</li> <li>• Use of standard component catalogs (e.g. SN29500) for FIT assignment in FMEDA</li> <li>• Modelling of nets for single-point and multiple-point failure analysis</li> </ul>
<b>Session 2</b>	<ul style="list-style-type: none"> <li>• Integration of safety mechanisms (DC values) and their malfunctions (latent failure, false failure)</li> <li>• Calculation of Functional Safety metrics in the APIS IQ-Software using the example of "low beam light" in various scenarios and analysis of results (traffic lights)</li> <li>• Derivation of a fault tree from the FMEA</li> <li>• Modelling of multiple-point failures in the fault tree and minimal cut sets</li> </ul>

## Organisational details

### Webinar booking form:

To register for the webinar, please fill in the following form and send it to us by e-mail or fax.

If you have any questions regarding the webinar, please contact us:

APIS Informationstechnologien GmbH  
Wolfenbütteler Straße 31 B  
D-38102 Braunschweig  
GERMANY

Tel.: +49 (0) 531 / 70736 - 0  
Fax: +49 (0) 531 / 70736 - 25  
E-Mail: [training@apis.de](mailto:training@apis.de)

## **General Terms of Business of APIS Informationstechnologien GmbH**

### **Registration**

All registrations for our seminars must be received in writing – by letter, fax or e-mail. By registering for one of our seminars, customers agree to be bound by our General Terms of Business.

Due to the limited number of places available for our seminars, they are awarded on a "first come, first served" basis. Registrations only become effective once they have been confirmed in writing.

If the minimum number of participants is not attained for a particular seminar then we will notify you immediately and offer an alternative date if required.

### **Cancelation**

A cancelation fee of 20% of the attendance fee is payable if cancelation notification is received between 8 weeks and 2 weeks before the start of the seminar. If the cancelation is received less than 2 weeks before the start of the seminar then the full attendance fee is payable. We appreciate your understanding in this matter. However, it is possible to appoint a substitute participant by arrangement. You will be notified immediately if an event needs to be canceled.

In all cases the liability of APIS Informationstechnologien GmbH is limited exclusively to the attendance fee. The course instructor and the seminar program are subject to change without notice.

### **Fees**

For details of our seminar fees, please refer to the list of seminar dates and fees. All prices are quoted per participant and are subject to VAT. The seminar fee is payable without deductions after the invoice is issued.

### **Scope of Validity**

These General Terms of Business apply to the running of seminars and training courses in the training facilities of APIS Informationstechnologien GmbH and in external training facilities. Any changes will only be valid if they are agreed in writing.

### **Data Protection**

By registering for a place on one of our courses you agree to your data being electronically stored and processed for the purpose of dealing with your registration.

### **Teaching Materials**

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# REGISTRATION

Please send to:

**APIS Informationstechnologien GmbH**  
**Wolfenbütteler Straße 31 B**  
**D-38102 Braunschweig**

**Fax: +49-531-70736-25**

Seminar title	Date	Location

Participant(s):

(Title) Surname, First name	E-Mail

Information for the invoice (please fill in completely):

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