

EMC for Functional Safety

Code: EFS
Length: 2 days
Fee: 1320 EUR + VAT or
according to an offer for "In-
house" delivery or a group
attending an open event.

Who should attend:

Our course EMC for Functional Safety is designed for product managers and development engineers working for EMC and high reliability of its products.

Prerequisites:

Good EMC knowledge is recommended, in line with our course EMC.

Content:

EFS addresses a process of thinking with concrete methods and measures to create products with functional safety from an EMC perspective. The course is given in English or Swedish.

Below are the excerpts from the content. The course is under constant development and we reserve the right to adjust the content.

The course is intended for product managers and development engineers.

EMC knowledge with some practical experience is recommended

The content aims to create an understanding and methodology for designing the EMC-related products with a focus on functional safety.

Introduction to EMC for Functional Safety (EFS)

- Processes, standards and product lifecycle
- Deficiencies in the conventional EMI immunity tests
- Managing EFS processor
- Design for EFS
- Verification and Validation

Implementation

- Secure materials, components and sub systems
- Measures to avoid mistakes
- Control of contractors
- Positioning
- Wiring and connections
- Filtering and shielding

EM environment - Intersystem

- Product related
- Environmental Related today and tomorrow
- Overview technology trends
- Technology of Measurement

Verification and validation

- Process checkpoints
- Different types of tests

EM environment - Intrasystem

- Segregation
- Energy Supply
- Component selection
- Iterating Processes

Selecting standard products and / or specify HW / SW products

- Simple or complex EFS product
- Measures for a simple EFS product
- Measures for a complex EFS product

EM environment and product feature

- EMC Security requirements
- Counting with uncertainty
- Risk determination
 - Initial risks
 - Total risk
- Methods for identifying risks
 - Standardised
 - Established but not standardised

EFS Assembly and installation

- Verification of Production
- EFS instructions
- Quality Control
- Documentation

Understanding and Designing for EFS

- General principles
- Design for Safety
 - Method of determining the risks
 - Including EMI in risk
- EFS HW-/SW-architecture
- Analysis and testing as design support
- EM and measures for better margins
- Limit the impact of errors and incorrect use

EFS throughout the product lifecycle

- Operating practices
- Procedures
- Periodic Testing / Replacement of Components
- Modifications and upgrades

Our stance of policy regarding pricing and size of group

The Training is done towards a group of persons - and each one is expected to have benefits of the training in the daily work. It means that each participant invest in competence to be more efficient, increase quality and as a result be more comfortable to fulfil the projects.

This is reflected in our way of pricing and the group size of our training. The price for in-house training is consequently related to the number of participants and the upper limit is 12-16. An efficient training requires engaged participants and a continuing dialogue that can be hard to reach with a high number of participants.

Training methodology

This course is composed by our appreciated InfoMap methodology which requires a wide whiteboard. A screen not hiding the board give good conditions to expand subjects and illustrate on the screen at the same time as holding the main presentation on the board.

To keep in mind when to ask for an offer

For an efficient procedure of making an offer we need some information related to the questions below.

If you have access to premises we ask for answers of the following questions.

Premises for training:

- Has the premises a whiteboard with minimum size of 2.5m x 1.2m (WxH)?
- Is a PC-projector and screen accessible for use?
- Does the screen hide the whiteboard? If not can the PC-projector still be directed to screen?
- Has the premises a flipchart?

It can be good to have the possibility to a more informal way of contact than the training conditions permits. One way to make this happen is during coffee breaks and lunch. We ask if coffee and/or lunch shall be included in the price or if it is handled by participants themselves.

Coffee and lunch breaks:

- How is it expected to be arranged - individual or in common?
- How is the conditions to have coffee/lunch close by training premises?

We appreciate if we can have information about the level pre-knowledge/ experience and the aim of the training for the group and if it is individuals that want to reach further. Naturally we need to know the total number to be trained.

We try to meet Your need regarding time and place of delivery. We appreciate if You can give a couple of choices regarding time of delivery. If You do not have access to premises suitable for training we appreciate a recommendation of a hotel or conference centre.

We use to start our training 8:30 AM, one hour lunch at 12 and end up around 4:30 PM. If You have other wishes regarding scheduling tell us and we try to adapt.

Frendus is a training company with focus in electronics, telecommunication and data communication. We offer our training services in or own premises in Sweden or internationally. We do high quality training and are open to adapt to the conditions of the group regarding level and content.

We also offer coaching to companies who want to support theirs employees in the role of trainer or to speak to a group.

Welcome to take contact for more information!

Pricing and number of participants

InfoMap

Keep in mind

Premises for training

Coffee & lunch

**Pre-knowledge
Aim of training
Number of participants**

**Time and place of delivery
Daily time frame**

*EMC and ESD
Data Communication
Radio & Transmission
Mobile Systems
Wireless Access*

Train the Trainer