

I samarbejde med TÜV og Yokogawa giver Insatech dig nu muligheden for at tage et uddannelsesforløb, der efter bestået eksamen gør dig til:

TÜV Certified Functional Safety Engineer

Safety Instrumented Systems

IEC 61508 / IEC 61511

Formålet med uddannelsen er at give alle ingeniører og teknikere, der er involveret i design, bygning, drift og/eller vedligehold af procesanlæg, den elementære og nødvendige viden om functional safety, baseret på de internationale standarder IEC 61508 og IEC 61511.

Standarderne beskriver, hvorledes du skal/kan vurdere et proces loop, og beregne om denne overholder de sikkerhedsnormer, der er opstillet for et givet anlæg eller enkelt loop.

Efter en bestået eksamen vil man få et unik ID nummer og uddannelsesbevis udstedt af TÜV Rheinland, og du må på dit visitkort bruge titlen TÜV Certified FS Engineer, med et tilhørende logo og dit ID nummer som vist i dette eksempel.



Adgangskrav:

En relevant Ingeniøruddannelse eller tilsvarende.

Eller 3-5 års praktisk erfaring med functional safety.

(Spørgeskema skal udfyldes og godkendes af TÜV, inden deltagelse kan bekræftes.

Spørgeskemaet fremsendes ved tilmelding.)

Tid og sted:

Forløbet tager 4 dage inkl. eksamen.

28.02.2012 - 02.03.2012 i Københavnsområdet.

Pris: 19.500,- kr. pr. person (incl. frokost)

Prisen faktureres ved bekræftet tilmelding

Antal deltagere: Minimum 5 og maximum 12 personer.

Tilmelding til: ahe@insatech.com

Tilmelding senest: 25.01.2012.

Du vil på de efterfølgende sider kunne læse mere uddybende hvilke emner dette forløb indeholder.

Vi glæder os til at se dig.

Med venlig hilsen
Carsten Hounsgaard

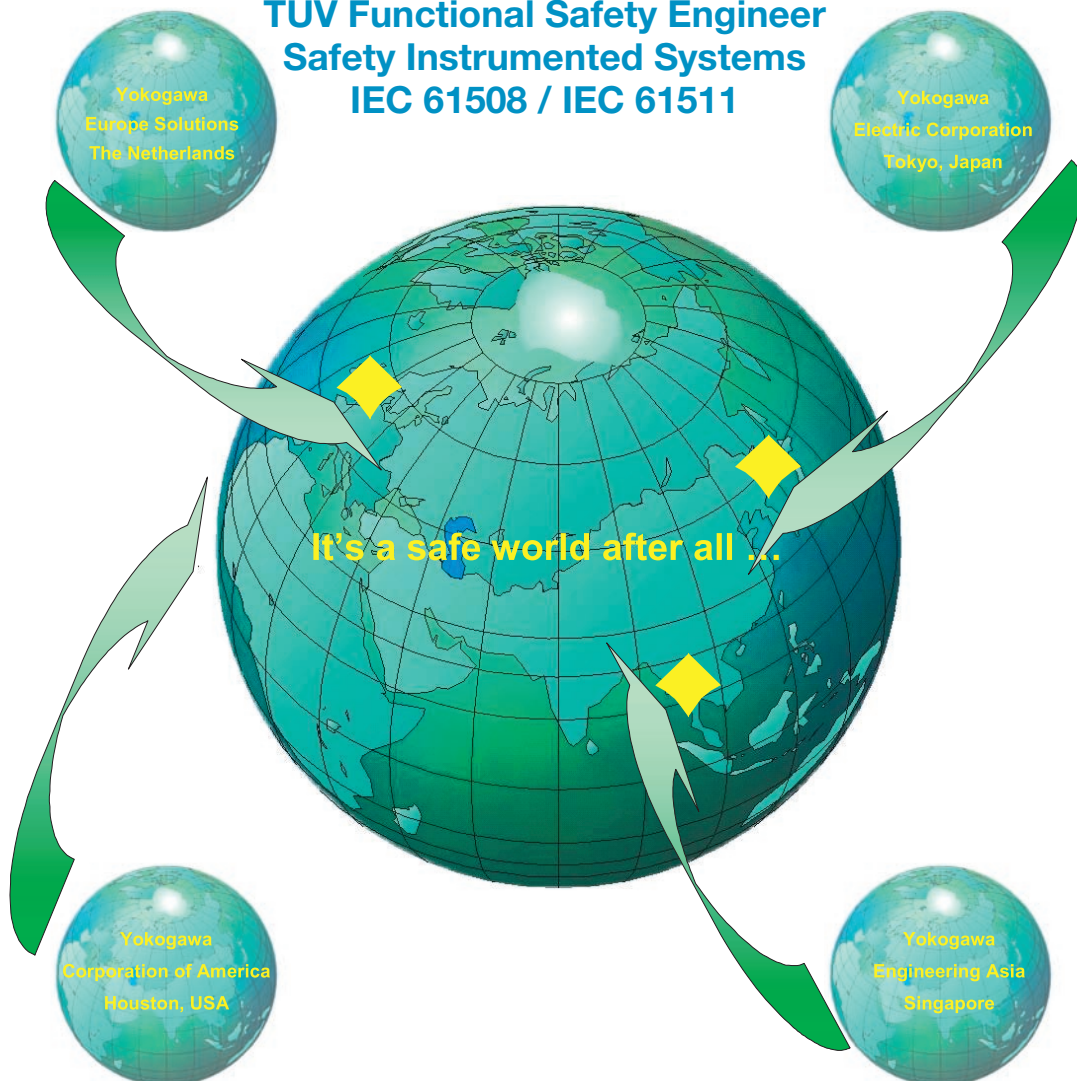


**Training Course and Examination
TÜV Functional Safety Engineer
Safety Instrumented Systems IEC 61508 and 61511**

TÜV Rheinland Functional Safety Program

Yokogawa course provider for the Safety Training

**TÜV Functional Safety Engineer
Safety Instrumented Systems
IEC 61508 / IEC 61511**



A three and a half days training course with examination.

Students who pass the examination will receive the TÜV Rheinland certificate:

TÜV FS Engineer

They may apply the TÜV logo on their business card





TÜV Certified Functional Safety Engineer – Safety Instrumented Systems

Course objective

The objective is to provide instrument engineers, application engineers, site engineers, project managers, operation engineers, maintenance engineers and all those who are involved in the design, realisation, maintenance and operation of safety systems with elementary and necessary knowledge about functional safety, based on the international standards IEC 61508 and IEC 61511.

Course information

When: February - 28 2011

Duration: 3.5 days

- The first two days is the training program: 09:00-12:00, 13:00-17:00
- Third day in the morning is the training program: 09:00-12:00
- Third day in the afternoon is the opportunity to ask questions (optional)
- Fourth day in the morning is the examination – 4 hours (maximum)

Price: DKK 19.500,- per participant

- Including course material
- Including fee for examination
- Including lunch
- Including accomodation

**Participant eligibility requirements: in accordance with
TÜV Rheinland Functional Safety Program**

- A minimum of 3 years experience in the field of functional safety.
- Bachelor degree as a minimum or equivalent engineer level responsibilities status as certified by the employer.
- Filled out eligibility forms must be sent in two weeks before training date at the latest.

Trainers: three trainers have been certified as TÜV Functional Safety Expert

- Bonne Hoekstra, TÜV

Language: English

Training course: rules

- Participants will receive training material at start of the training, including hand outs of the ppt presentation and exercise sheets.
- At the end of each training day the applicant will receive the solutions of the group exercises of that day. It may be used for preparing for the examination.



Examination: rules

- Prerequisite to do the examination is that the applicant has to attend Yokogawa’s training course “TÜV Functional Safety Engineer SIS”.
- Pass score is 75%.
- There are 60 multiple (3) choice questions. At the most 2 good answers per question are possible, which is indicated if applicable. The answers will be valued as follows:

good answer	good answer	fault answer	fault answer	no answer	earned point
x	-	-	-	-	1
x	x	-	-	-	2
x	-	x	-	-	0
-	-	x	-	-	0
-	-	x	x	-	0
-	-	-	-	x	0

- There are 7 safety cases. The maximum points to be earned per case are mentioned.
- The examination questions and exercises will be handed over at the start of the examination.
- It is not allowed to bring any documents or (hand held) pc to the exam.
- It is not allowed to take any documents or notices from the exam.
- Check of the examination results will be done by two functional safety experts of Yokogawa.
- Counter check will be done by TÜV Rheinland.
- Discussion about the results is not possible.
- Applicants who succeed will receive their certificate from TÜV Rheinland, which may take some weeks.

Re-examination: for those who did not pass the examination

- Within one year after a failed examination, applicants may sign up once for another examination, free of charge.
- If applicants sign up for attending the training course again, they have to pay full course price.

TÜV Certificate: the validity of the TÜV certificate is 5 years

Prolongation of the TÜV FS Engineer certificate will be effected as follows:

- TÜV FS Engineer has to send an official letter from his/her employer or from a customer to TÜV Rheinland, in which his/her current and continuous work in the specified area of the certification (in this case Safety Instrumented Systems) is described and/or confirmed.
- The TÜV FS Engineer has to forward a paper (2-3 pages) to TÜV Rheinland describing projects he/she has carried out during the last 5 years of his/her professional life describing his/her experience in functional safety.
- The costs for the new TÜV FS Engineer certificate are Euro 250. Only after the TÜV FS Engineer has paid the costs to TÜV Rheinland the new TÜV FS Engineer certificate will be issued.
- The new TÜV FS Engineer certificate will be valid for another 5 years.
- TÜV Rheinland will send an e-mail to all TÜV FS Engineers whose certificate will expire, by end of the year preceding the expiration date.
According information will be given on the website.
- TÜV FS Engineers who do not wish the prolongation of their certificate will be listed on the TÜV Rheinland website with the indication that their certificate is no longer valid.

Location: at Tivoli Congress Center, Copenhagen



Course agenda overview

Day 1: morning 09:00 - 12:00

- General Introduction

Module 1: Introduction to Functional Safety

- What is safety?
- Why safety?
- What is a safety system?
- Position of SIS in the total equipment under control

Module 2: International safety standards IEC 61508 and 61511

- The five main pillars of the standards

Day 1: afternoon 13:00 – 17:00

Module 3: HAZOP - SIF - SIL

- Hazard and risk assessment
- Determine Safety Instrumented Functions (SIF)
- Determine Safety Integrity Levels (SIL)
- Group exercises

Day 2: morning 09:00 – 12:00

Module 4: Safety Engineering

- De-energize To Safe state (DTS)
- Energize To Safe state (ETS)
- Redundancy
- Safety architectures
- Reliability modeling (Reliability Block Diagram – RBD)
- Group exercise on RBD
- Sensor validation
- Overrides, by-passes, inhibits
- Process safety time and system response time
- Logic Solver architectures

Day 2: afternoon 13:00 – 17:00

Module 5: Functional Safety Management

- Implications for organizations involved throughout the safety life cycle

Module 6: Failures and Hardware Fault Tolerance

- Random hardware failures and their modes
- Failure mode effect analysis
- Safe Failure Fraction (SFF)
- Hardware Fault Tolerance (HFT)
- Group exercise on HFT

Day 3: morning 09:00 – 12:00

Module 7: Common cause influences and other failure types

- The beta factor
- Systematic failures
- Human Failures

Module 8: Safety calculations

- Safety parameters
- Formulas
- Proof testing
- Group exercises on PFD_{AVG} calculations

Day 3: afternoon 13:00 – 17:00

Session for your questions

- The attendance of this session is optional
- Opportunity to do more exercises (optional)
- Time for self study

Day 4: morning 09:00 – 13:00

Examination

- 60 Multiple choice questions
- 7 Cases
- Those who have finished may leave earlier