
TRAINING COURSE

Design SIL achievement (T243)

A practical training course for engineers or designers who require more detailed training in the concepts and principles that underpin the IEC 61511 functional safety standard and its use for verifying the achieved Safety Integrity Level (SIL) of the proposed or existing Safety Instrumented Function (SIF).

24th-25th May 2022 - Warrington, ABB Office

13th-14th September 2022 - Teesside, ABB Office



Design SIL achievement (T243)

Process Industries rely upon the performance of Safety Instrumented Functions (SIFs) to protect and maintain operating assets. Engineers and designers are required to verify if the designed process is safe and the SIFs meet the requirements for their SIL.

ABB has created this two day course for engineers and designers who require more detailed training in the concepts and principles that underpin the IEC 61511 functional safety standard and its use for verifying the Safety Integrity Level of a proposed or existing safety instrumented function.

What the course will cover

The training course is structured around instruction and workshops that initially explain the underlying concepts of safety device selection and verification for meeting the Target SIL requirements identified in the Safety Requirements Specification (SRS).

Who will benefit and what they will gain

The course is aimed at engineers and designers involved in SIF device selection and for verifying the performance of new or existing safety instrumented functions. The course features a number of workshops to enable delegates to practice using the formulae on ever increasing complex examples.

Duration

2 days

Price

£1220 + VAT

Following the course you will be able to:

- Understand the concepts underpinning SIL achievement requirements
- Identify what information is essential before starting the calculation
- Apply correct formula PDF_{avg} / PFH for serial or parallel instrument configurations
- Derive instrument failure rates from commonly available sources
- The benefits and disadvantages of manufacturers certificates
- What checking and approval is needed for different Safety Integrity Levels
- Verify the achieved SIL from a number of worked examples

Course tutors

Ian Kemble

Ian is a Senior Safety Consultant with ABB Limited. He is a Chartered Engineer and Certified Functional Safety Professional with over 35 years of experience in industrial automation and control engineering, delivering solutions and services to a wide range of industries including Oil & Gas, Chemicals, Pharmaceuticals, Food & Beverage, Manufacturing, Metals, Mining, Government Establishments and Power & Utilities, with much of this work completed in accordance with international regulatory standards.

Rafal Selega

Rafal is a Senior Safety Consultant within ABB Limited and has over 22 years' experience within the Process Industries where he has held a series of posts in process plant design, technical engineering, BPCS / SIS commissioning and compliance assessment roles.

Rafal has in-depth experience for safety device and SIF architecture selection and the application of procedures to be applied for SIL determination, verification and functional safety management. Rafal is a member of the IEC 61511, IEC 61508 maintenance committees and 'ISA 84'. He is a TÜV Rheinland Functional Safety expert.

Agenda

SIL as part of functional safety

- Why do we need functional safety and Safety Instrumented systems (SIS)?
- 'Three Steps' to SIL: SIL determination, achieved SIL, operations and maintenance
- Functional safety standards; IEC 61511 and IEC 61508

Setting the target SIL

- Risk and risk reduction
- Reminder of hazard identification and SIL determination

Safety requirement specification

- Information to be specified to design group or external company

Designing for SIL

- The calculated failure measure (PFDavg / PFH)
- Requirements for system behaviour on detection of a fault
- SIF architectural constraints on hardware safety integrity (Route 1H, 2H and IEC61511 requirements)
- SIF bypassing
- SIF systematic safety integrity requirements (Route 1s, 2s and 3s) prior use and proven in use concept
- SIS operator / maintenance interface and communication interface requirements

SIL verification calculations

- Reliability and availability
- SIF subsystem redundant architectures - comparison and calculation formulas
- PFDavg calculations
- Proof test concept
- IEC 61511 requirements for reliability data quality
- The effect of proof test effectiveness
- Common cause effect on the calculated measure
- Partial testing

SIL device selection

- Basic design requirements from safety standards
- Certification limitation
- Required information from a device manufacturer for safety-related device
- FMEDA reports
- IEC 61508 certification process
- Quality and Functional safety management systems for the suppliers
- Other options of compliance- prior use and proven in use
- A device safety manual
- What can be found in the certificate

How to book

Web: www.abb.com/uk/consulting/training

Email: jackie.kendall@gb.abb.com

Phone: Call Jackie Kendall on +44 (0)1642 372121

ABB Limited

Daresbury Park
Daresbury
Warrington
Cheshire
WA4 4BT
United Kingdom
Phone: +44 (0)1925 741111
E-Mail: contact@gb.abb.com

ABB Limited

Hareness Road
Altens Industrial Estate
Aberdeen
AB12 3LE
United Kingdom
Phone: +44 (0)1224 592123
E-Mail: contact@gb.abb.com

ABB Limited

The Shearer Building
Earls Road
Grangemouth
Stirlingshire
FK3 8XG
United Kingdom
Phone: +44 (0)1324 494406
E-Mail: contact@gb.abb.com

ABB Limited

Pavilion 9
Byland Way
Belasis Business Park
Billingham
Cleveland
TS23 4EB
United Kingdom
Phone: +44 (0)1642 372000
E-Mail: contact@gb.abb.com

ABB Limited

The Deep Business Centre
Tower Street
Hull
HU1 4BG
United Kingdom
Phone: +44 (0)1482 481160
E-Mail: contact@gb.abb.com

abb.com

