SIS-TECH

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TÜV Rheinland Functional Safety Engineer Certification

Time:	Day 1	8:00 am to 4:30 pm	Day 2	8:00 am to 4:30 pm	Day 3	8:00 am to 4:30 pm
	Day 4	8:00 am to 12:00 pm	Test	1:00 pm to 5:00 pm		
CEU:		2.3				

Recommended Precursor Courses:

- Safe Automation in the Process Industry (or equivalent)
- SIL Verification – Fundamentals and Calculations (or equivalent)

Audience: Control system specialists, instrumentation and electrical personnel, and SIS design specialists, who have at least 3 years of experience in SIS application and who want to prepare for TÜV certification

Description: While SIS Engineers might have a particular aspect of SIS work that they are most experienced in, success in taking the TÜV Functional Safety Engineer exam requires the applicant to have a broad understanding of most aspects of the ISA/IEC 61511 standard. This 3½ day course provides a holistic refresher on primary activities required for the identification, design, implementation, and management of Safety Instrumented Systems (SIS), per the current edition of ISA/IEC 61511-1, starting with the official definitions of key terminology and the functional safety planning required of the facility. The course will then summarize the common process-sector semi-quantitative hazards and risk assessment (H&RA) methods (e.g., LOPA and event tree) , including updated limitations on safety function allocation. A recap of the SRS content requirements is provided, focusing on the pragmatic order in which this information should be developed. The two approaches for device approval and three primary constraints on achieving a target SIL are summarized, supplemented with hands-on exercises in the correct use of safety failure fraction, the calculation of PFDavg using Boolean and Markovian approaches, and accounting for design options such as diagnostic coverage and partial testing in the quantitative analysis. Mandatory SIS Assurance Activities throughout the complete lifecycle are then addressed. Finally, the course covers the obligations for Operations and Maintenance phase of the lifecycle, including mandatory activities associated with managing change both to the SIS itself and to the basis of the allocation of safety functions to the SIS. The course supplements ISA/IEC 61511-1 requirements with additional guidance from other industry RAGAGEP publications.

DAY 1 – "Planning" SIS	*DAY 2 – "Doing" SIS*	*DAY 3 –"Checking" SIS*
• SIS Standards Overview • Management of Functional Safety • Hazards & Risk Assessment • Allocation of Safety Functions	• Process Requirements Specification • Conceptual SIS Design • Completing the SRS • Data Estimation	• Quantitative Design Verification • Defining SIS Assurance Activities • Installation Verification & FSA1-2 • Validation & FSA3 • Performance Assessment & Auditing

DAY 4 –Sustaining SIS AND TEST	Morning	Afternoon:
	• SIS O&M Basics • Managing Change • TÜV Rheinland FSE Module • Final Q&A	• Exam