

SYSTEM EXPERT

From Risks to Safety



«
FUNCTIONAL SAFETY.
SIS OPERATIONS
(IEC 61511)

»

WE HAVE BEEN TEACHING SINCE 2015

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OUR COURSE :

- FOR OIL AND GAS COMPANIES, PETROCHEMICAL AND CHEMICAL COMPANIES
- FOR COMMISSIONING COMPANIES

LEVEL:

- TECHNICIAN SIS

RESULTS:

- EXAMINATION
- CERTIFICATE OF THE VOLUNTARY CERTIFICATION SYSTEM "SAFETY STANDARD"
- CERTIFICATE OF PROFESSIONAL ADDITIONAL DEVELOPMENT OF THE STATE STANDARD
- INCLUDING TO THE REGISTER OF FUNCTIONAL SAFETY AND HAZOP SPECIALIST "SAFETY STANDARD"
- REGISTRATION ON THE STATE EDUCATION AND QUALIFICATION REGISTER (FIS FRDO)

COST:

- AVAILABLE ON REQUEST



18

HOUR'S

COURSE DURATION

Base qualification: Specialist in instrumentation and automation (40.158) or Operator of gas processing facilities (19.038)

Qualification document: **Certificate of Professional Development**

State Education Accreditation: License reg. no. L035-01298-77/01957606

Voluntary System Accreditation: ROSSTANDART reg.num. POCCRU.33109.04BШГ0

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TRAINER:

- TUV FS Certified Engineer
- HAZOP and LOPA Facilitator.
ESD expert
- Expert in certification of
instrument systems on
Functional Safety



Dmitrii
Blokhin

Director of Sistema Expert

DAY 1

SYSTEM EXPERT

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9:30-9:45

Introduction

- Accuaintance
- Planning
- Course presentation

9:45-12:30

Regulatory base

- Topic 1. Structure of the regulatory framework
- Topic 2. Risk analysis in the Federal Law, Federal Rules, GOST
- Topic 3. SIS in Federal Rules
- Topic 4. Practical assurance of compliance with the Federal Rules requirements for engineering and operating SIS systems
- Topic 5. Accidents and their causes
- Topic 6. Safety Layer model
- Topic 7. Safety and risk level
- Topic 8. Protection levels and Safety Instrument Systems (SIS)

13:00-15:30

Functional Safety Base

- Topic 1. What is Functional Safety? Principles
- Topic 2. Safety features. Instrument System Safety Function (SIF)
- Topic 3. Standards GOST R IEC 61508, GOST R IEC 61511
- Topic 4. Completeness of Safety requirements
- Topic 5. Principles Deenergized To Safe, Energized To Safe
- Topic 6. Safety loop structure
- Topic 7. Safety Integrity Level (SIL)
- Topic 8. Positioning of SIS in the structure of the Control System (DCS)
Difference between SIS and DCS
- Topic 9. Reasons and types of failures

15:30-17:30

General aspect for all phases

- Topic 1. Functional Safety management and documentation
- Topic 2. Checks: verification, confirmation of compliance (validation), functional safety assessment and audits (FSA)
- Topic 3. Practical life cycle and the procedure for forming SIS requirements
- Topic 4. The main differences between hardware with a SIL level. The procedure for certifying hardware
- Topic 5. Information and documentation on SIS components
- Topic 6. Types of redundancy. Hardware tolerance to dangerous failures (HFT)
- Topic 7. Performance requirements, safety time

DAY 2

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9:30-10:30

Overall Safety Validation

- Topic 1. Factory Tests (FAT)
- Topic 2. Installation
- Topic 3. Commissioning
- Topic 4. Acceptance Tests (SAT)

10:30-14:00

Operational phase

- Topic 1. Operation planning
- Topic 2. Safety Manuals of the SIS components
- Topic 3. Requirements for the current operation of SIS systems. Periodic inspection and diagnosis
- Topic 4. Operator interface
- Topic 5: Safety PLC Solutions
- Topic 6. Safety Instrumentation Solutions
- Topic 7. Using bypasses and forcing actions
- Topic 8. SIS operation during start-up and shutdowns.
- Topic 9. SIS operation in emergency mode (faulty state)

14:00-15:30

Maintenance and Repair

- Topic 1. Periodic proof tests
- Topic 2. Maintenance and repair of the SIS
- Topic 3. SIS faults tracking and analysis

14:00-17:30

Modifications

- Topic 1. Reasons for making changes
- Topic 2. Management of change. Initiating changes. Roles and responsibilities
- Topic 3. Safety impact analysis
- Topic 4. Procedure for making changes during operation
- Topic 5. Decommissioning and Disposal

Questions

DAY 3

19:30-12:00

Examination

- a test based on the completed material.

13:00-14:00

Summing up the results

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