



# Certified SIL Professional/Expert



VELOSI TRAINING  
INSTITUTE L.L.C.

## Overview

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Organizations have moral, legal, and financial responsibilities to limit the risks their operations pose. Whether the potential recipients of that risk (receptors) are employees or members of the public, they cannot be exposed to a level of risk greater than that, which is morally tolerable. Therefore, the management of a facility has to demonstrate that the facility is as safe as can be reasonably expected.

As an important risk reduction measure, Safety Instrumented Systems (SIS) play an important role in most of the process facilities worldwide. Within the context of functional safety, the necessary steps to follow to cover the needs and the requirements for the whole life cycle of safety-instrumented systems are dealt with. In accordance with the requirements set in the associated international standards such as IEC 61508/ IEC 61511 all phases including the design activities, verification & validation, commissioning & start up, the normal operation phase, and de-commissioning phase for safety-related systems that are based on electrical, electronic, and/or programmable electronic (E/E/ PE) technology shall be managed during their life cycle.

## This Course Covers The Following Subjects:

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- A review on Process Safety Management (PSM) systems, definition, importance, evolution, the types and the link to Functional Safety;
- An introduction to Risk Assessment in process industry: definition, importance, principles and expressions; As Low As Reasonably Practicable (ALARP) concept, ALARP demonstration using Cost Benefit Analysis (CBA);
- A review on Likelihood analysis techniques such Fault Tree Analysis (FTA), Reliability Block Diagram (RBD), and Event Tree Analysis (ETA);
- Consequence analysis concepts;
- Understanding the importance of Safety Integrity Level (SIL) determination, Layer of Protection Analysis (LOPA);
- Management of Functional Safety, Functional safety concept based on IEC 61511;
- Safety Requirements Specification (SRS);

- SIL verification, concepts and understanding of different calculation methods and limitations, failure rate data and limitations, understanding of proof testing (complete and incomplete), the associated procedures and effectiveness, the impact of CCF on PFD/ PFH, systematic failure, human factors;
- Average Before Logic (ABL) & Average After Logic (AAL), the difference and the impact on the reliability assessments;
- SIL validation

## Learning Outcomes

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This course provides the delegates with a clear understanding about Functional Safety Life Cycle concepts as per IEC 61511, why there is a need for such concept, its link to PHA/ Risk assessments and how to manage the required steps.

The main focus will be communicating the required knowledge to the delegates to achieve a thorough understanding on SIL determination, SIL verification and SIL validation and the associated requirements in view of required Safety Instrumented Functions (SIF) realized by Safety Instrumented Systems (SIS) to control risks associated with hazardous scenarios in process facilities.

## Who should attend?

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Process, Design, Safety, Operations, Instrumentation & Control, Maintenance, Integrity, Plant Engineers, Managers and Professionals.

## Eligibility

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Years of Exp.	High School Diploma	Bachelor Degree - Unrelated Field	Bachelor Degree - Related Field	Master Degree - Unrelated Field	Master Degree - Related Field
Professional	6 years exp.	4 years exp.	2 years exp.	1 years exp.	0 years exp.
Expert	9 years exp.	7 years exp.	5 years exp.	4 years exp.	3 years exp.

# Certificate

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Upon successful completion of the training and examination, participants will be awarded '**Certified SIL Professional/ Expert**' certificate depending on years of experience.

## Course Outline

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### Module 1:

- A review on Process safety management systems (PSM), definition, importance, evolution, the types and the link to Functional Safety;
- An introduction to Risk Assessment in process industry: definition, importance, principles and expressions; ALARP concept, ALARP demonstration using CBA;

### Module 2:

- A review on Likelihood analysis techniques (FTA, RBD, ETA); Consequence analysis concepts;
- Understanding the importance of SIL determination, Layer of Protection Analysis (LOPA);

### Module 3:

- Management of Functional Safety, Functional safety concept based on IEC 61511;
- Safety Requirements Specification;
- SIL verification, concepts and understanding of different calculation methods and limitations, failure rate data and limitations, understanding of proof testing (complete and incomplete), the associated procedures and effectiveness, the impact of CCF on PFD/ PFH, systematic failure, human factors (Part 1 of 2);

### Module 4:

- SIL verification, concepts and understanding of different calculation methods and limitations, failure rate data and limitations, understanding of proof testing (complete and incomplete), the associated procedures and effectiveness, the impact of CCF on PFD/ PFH, systematic failure, human factors (Part 2 of 2);
- ABL (Average Before Logic) & AAL (Average After Logic), the difference and the impact on the reliability assessments;



- Spurious trips; SIL validation;

## Module 5:

- Practical industry examples and discussions;

## Other Courses We Offer:

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- Safety Certification Exam Course
  - CFPS
  - CIH
  - ASP/CSP CFSP/CFSE
- Oil & Gas/Energy Industry Training
  - Asset Integrity Management
  - Pipeline Integrity Management
  - Wellhead Integrity Management
  - Structural Integrity Management
  - Certified PHA HAZOP Leader
  - SIL Selection and Verification
  - Process Design Training
  - API Trainings.
- Maintenance & Reliability Certification Exam Courses
  - CMRP
  - CMRT
- After this Standardized Test Training
  - Quantitative Risk Assessment
- NEBOSH courses
- Firefighting Training
- H2S & BA Training
- First Aid Courses/Training
- HSE Courses/Training
- IOSH/OSHA Certified Courses IADC Certified Courses
- ISO Training
- Security and Safety Training
- Environment Protection Training
- Standardized Test Training
- Administrative and Management Skills Training
- High-field (HABC) Accredited Trainings

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