



INSTITUTE  
of  
HAZARD PREVENTION

# F.S. ENG. SIS TÜV (RHEINLAND) CERTIFICATION

(FUNCTIONAL SAFETY ENGINEERING) CERTIFICATION - SAFETY INSTRUMENTED SYSTEMS OR TÜV (RHEINLAND) FUNCTIONAL SAFETY QUALIFIED



## PROFESSIONAL DEVELOPMENT:

**Four classroom days, with 1/2 day exam** providing 3.2 CEU (Continuing Education Units) or 32 PDH (Professional Development Hours). Includes course registration, course materials, lunch and refreshments, exam, and a submission to TÜV (Rheinland).



## BENEFITS OF THE F.S. ENG. SIS TÜV (RHEINLAND) CERTIFICATION:

The TÜV (Rheinland) Functional Safety Training Program is the only worldwide extended vocational training program in the area of Functional Safety, where knowledge and competencies are evaluated by a neutral third party, and where certificates are issued.

TÜV (Rheinland) has institutionalized this training program in 2004 together with national and international companies like ACM Facility Safety, and experts of the Functional Safety field. As of today more than 14,000 engineers have participated in the various training topics, and have become a “Functional Safety Engineer TÜV (Rheinland)”.

Take advantage of this course, examination and certificate to prove to your clients, peers and management, your competency in the field of Functional Safety. Success in the final examination confirms your functional safety knowledge, adding a great value to your professional credentials and career.



## COURSE OVERVIEW:

The TÜV (Rheinland) Functional Safety Program supports engineers or any person working in the functional safety field. It supports the professional development of practitioners in the field of functional safety by incorporating the principles of REVISED IEC 61511:2016-2nd EDITION and other relevant international standards into a technical training course, designed to add depth of knowledge and understanding of the subject. The program, also, offers engineers who possess work experience in the field of functional safety the ability to obtain a certificate, demonstrating their expertise. For more information, refer to [www.tuvasi.com](http://www.tuvasi.com)

ACM's TÜV (Rheinland) Functional Safety Engineering training course within the TÜV (Rheinland) Functional Safety Program has been reviewed and accepted by TÜV (Rheinland) Industrie Service GmbH - Automation, Software and Information Technology (ASI).



## PREREQUISITES OR RELATED COURSES:

In accordance with the TÜV (Rheinland) Functional Safety Program guidelines, students should possess:

- A minimum of 3 to 5 years' experience in the field of functional safety
- University degree or equivalent engineer level responsibilities status as certified by employer

Participants are eligible to receive a TÜV (Rheinland) certificate and to use the title “Functional Safety Engineer TÜV (Rheinland)” concerning Safety Instrumented Systems within the TÜV (Rheinland) Functional Safety Program provided that they:

- Attend ACM's TÜV (Rheinland) Functional Safety Program training in Safety Instrumented Systems;
- Pass the Final Exam, after attending ACM Facility Safety training;
- Meet all other eligibility criteria according to the TÜV (Rheinland) Functional Safety Program.

**Note:** Participants who meet these requirements without a professional engineer designation (i.e. Technologists) will be given the "TÜV (Rheinland) Functional Safety Qualified" title.



## WHO SHOULD ATTEND?

This course is well suited to engineers and technologists who aim to follow the best engineering practices with regard to the application of Safety Instrumented Systems in the process industry, including:

- Risk professionals responsible for establishing corporate tolerable risk targets
- Managers / Team Leaders responsible for determining SIS design standards
- Engineers and technicians responsible for ensuring that SIS have been designed to appropriately mitigate the level of risk identified
- Project Managers who need to understand the concepts and principles of IEC 61508 & 61511
- Engineers involved in any aspect of the SIS Safety Lifecycle



## COURSE OUTLINE:

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Overview of TÜV (Rheinland) Program	SIL Determination Methods (more depth) <ul style="list-style-type: none"> <li>• Fault Tree</li> <li>• Safety Layer Matrix</li> <li>• Calibrated Risk Graph</li> <li>• LOPA</li> </ul>	<b>Phase 4</b> - SIS Design & Engineering (more depth)	<b>Phase 5</b> - Installation, Commissioning & Validation	<b>Morning – 4.5 hr exam</b>
Why are we here?	<b>Phase 3</b> - Safety Requirements Specification		<b>Phase 6</b> - Operation & Maintenance	
Introduction to Safety Instrumented Systems			<b>Phase 7</b> - Modification	
Overview of REVISED IEC 61511:2016-2nd EDITION Standard more depth			<b>Phase 8</b> - Decommissioning	
<b>Phase 10</b> - Management of Functional Safety			<b>Activity 9</b> - Verification	
<b>Phase 1</b> - Hazard & Risk Analysis			<b>Activity 10</b> - Assessment & Auditing	
<b>Phase 2</b> - Allocation of Safety Functions to Protection Layers			<b>Activity 11</b> - SLC Structure & Planning	

## FINAL EXAM:

**A passing mark of 75% is required on the Final Exam.** Students must bring a complete, unmarked copy of the full REVISED IEC 61511:2016-2nd EDITION- Functional safety - Safety instrumented systems for the process industry sector standard to the course. It is the only reference material allowed into the exam. The standard is readily available from various sources, including the ISA web site <http://www.isa.org/>



## THE ACM EXPERIENCE:

Our courses and workshops are experiential, interactive and provide participant's with practical knowledge and tools that can be immediately applied back at work.



## COURSE TESTIMONIALS:

Here are a few quotes from over 3,300 participants we've trained;

- *"The instructor was very interactive, encouraged discussion and welcomed feedback."*  
**Process Engineer**
- *"Great course content, coverage and length. Superb instructor who presented material as it applies to real world scenarios."*  
**I&C Engineer**
- *"Displayed depth of knowledge and experience. Showed passion for the functional safety process."*  
**VP Engineering**
- *"I learned a lot in this course, especially with real industry examples that the instructor explained based on his depth of knowledge and experience."*  
**Process Engineer**
- *"The instructor is very knowledgeable and is always willing to teach and give guidance. The way the instructor taught the course made understanding IEC 61511 standard much easier."*  
**Inspection Analyst Engineer**
- *"Really knowledgeable on the matter, great analogy. Willing to go beyond course material."*  
**Automation Engineer**
- *"Excellent throughout, lots of practical experience and enthusiasm related to subject. Pleasure to work with. Looking forward to working with ACM on projects and training programs in the future."*  
**P.Eng. President**



## COURSE INSTRUCTORS



### Malcolm Harrison

**B.Sc. Mech. Eng., P.Eng., TÜV (Rheinland) F.S. Expert / Instructor**

Mr. Harrison is a P.Eng. with over 40 years' experience in Instrumentation and Controls. Malcolm spent over 35 years with Shell and has diversified upstream and midstream experience in the heavy oil, offshore, refining and gas processing sectors. He is an experienced SIL Determination and CHAZOP facilitator and has worked on billion dollar projects ensuring horizontal I & C alignment between multiple EPCMs. Malcolm is a TÜV Functional Safety Expert and leads training workshops globally for ACM.



### **Guillermo Pacanins**

**B.Sc. Elec. Eng., P. Eng., TÜV (Rheinland) F.S. Senior Expert / Instructor**

Mr. Guillermo Pacanins is an Electrical Engineer with over 27 years of experience with knowledge in Process Controls and Functional Safety in the process industry. He has taught several courses in Process Automation to some of the largest companies in the world. With Mr. Guillermo's excellent communication and leadership skills, combined with his in-depth understanding of Process Safety Engineering makes him a successful functional safety analyst/educator.

Guillermo is a TÜV Functional Safety Senior Expert and teaches several functional safety workshops globally for ACM. Also, Guillermo has a Process Safety Practice Certificate from Texas A&M University, Mary Kay O'Connor Center for Process Safety.

[View instructor profiles online.](#)

**CONTACT FOR FURTHER INFORMATION:** [info@acm.ca](mailto:info@acm.ca)

**CALL TOLL FREE AT 1-877-264-9637**

**PRIVATE IN HOUSE TRAINING COURSES:**

<http://www.acm.ca/institute-of-hazard-prevention/private-courses>

