# **SIEMENS**

# Online Instructor-led Training TIA Portal Safety Engineering – Virtual

## **General Information**

Course Code: SCT-PTOILSFTE1A Length: 3 Days

#### Audience

This course is for engineers and personnel responsible for implementing and maintaining SIMATIC S7 TIA Portal Distributed Safety systems, including:

- Selecting the appropriate architecture
- Selecting the components and understanding their specific purposes and limitations
- Specifying the module and system wiring
- Developing the safety PLC program
- Starting up, supporting, and troubleshooting the system.

#### **Prerequisites**

• TIA Portal Programming 1 OR

TIA Portal Service 1 AND TIA Portal Service 2

#### Profile

1.5 CEUs (Continuing Education Credits)

This course introduces the student to a Siemens Distributed Safety PLC application. Participants receive knowledge on applying the system per relevant standards, Failsafe/PROFIsafe settings, operation, Hardware Module details and parameterization, Safety Program structure and implementation, Safety Communications, System Diagnostics and introduction to Drive Safety.

The course format is a combination of instruction and hands-on exercises. A realistic model is used for demonstrations and student exercises. Hardware is simulated using PLCSIM Advanced and a virtual Safety Trainer. Exercises allow students to practice tasks such as configuration, programming, and code debugging.

### **Objectives**

Upon completion of this course, the student shall be able to:

- Locate and understand the applicability of the detailed documentation and development resources
- Load a starting project and configure the Failsafe Hardware components as well as understand their application restrictions.
- Properly implement a Safety program in the PLC.
- Document, test, and troubleshoot the system using PLCSim Advanced and a virtual Safety Trainer.

#### Topics

- 1. Standards discussion
  - a. Standards as related to selecting and configuring Distributed Safety
  - b. Risk assessment concept
  - c. Safety related control function architectures
- 2. Product Overview
  - a. Licensing
  - b. Features
  - c. Safety Hardware Overview
- 3. Functional Safety Principles
  - a. Conventional and Integrated Safety
  - b. PROFIsafe Communication
  - c. Safety Program / Diverse Program
- 4. ET 200SP distributed I/O system
  - a. Base Unit Selection
  - b. ET 200SP with fail-safe and non-fail-safe modules
  - c. Mounting and addressing ET 200SP F-I/O
  - d. 1001, 1002 evaluation for SIL1 through SIL 3
  - e. Wiring examples / F-I/O
  - f. PM / PP Power Switching
  - g. Emergency Stop and Position Devices
- 5. Safety related Hardware Configuration
  - a. Configuring an S7-1500F
  - b. CPU Safety Parameters
  - c. Configuring the F-I/O & Parameters
  - d. Configuring F-PM parameters: Potential group e. PROFINET device name/address
- 6. Safety Advanced: Channel Configuration
  - a. DI, DO, AI, AO
  - b. F-DI, F-DO, F-AI, F-AO
- 7. Safety Advanced: Programing
  - a. User Program of an F-CPU
  - b. Blocks of the Safety Program
  - c. Structure and Editing of the safety program
  - d. Main Safety Block of the S7-1500
  - e. Creating F-FC / F-FB
  - f. Safety Administration Editor
  - g. Compiling & Downloading the Safety Program