SIEMENS

PCS7 Process Safety Sustaining

General Information

Course Code	SCT-PCSFTS1A
Global Code	ST-PCS7SAF
Length	3 Days
CEUs	2.1

Audience

This course is for site engineers and maintenance staff responsible for sustaining and operation of a Siemens PCS7 based Safety Instrumented System (SIS).

Prerequisites

- PCS7 System Engineering 1 (F2F or Virtual)
- PCS7 System Service 1 (SCT-PCSVCS1B)

Profile

This course builds skills for sustaining and operating a Siemens PCS7 Process Safety System. The course begins with an introduction to process safety system concepts, with insight on typical process control architectures. The course then builds skills in hardware components, basic SIMATIC project management, and system troubleshooting. Attendees will review system program elements and tools to learn support systems level troubleshooting. The Safety Matrix, a tool available for safety cause and effect configuration is also covered. The class will use a functioning safety demo project with minimal system programming.

Objectives

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

- Use the basic knowledge of a process safety control system to properly sustain an existing system.
- Configure the proper CPU hardware and signal modules to ensure appropriate system response.
- Navigate a safety project using the proper SIMATIC software tools.
- Configure the Safety Library blocks to manage a safety shutdown program.
- Configure using the Safety Matrix programming tool to manage a safety system.
- Operate, control, and troubleshoot a safety system using the Safety Matrix tool.
- Troubleshoot the system using various software tools and status indicators.

Topics

1. Process Safety Overview
   a. Safety Engineering Objectives
   b. Risk Analysis Overview
   c. International Safety Standards
   d. The Safety Life Cycle IEC 61508
   e. Safety Integrity Levels (SIL)
   f. Fired Heater Demo Operations
2. Siemens Process Safety
   a. Certifications and Classifications
   b. Siemens Safety Integrated
   c. PCS7 Integrated Safety
   d. Redundancy Architectures
   e. Flexible Modular Redundancy (FMR)
   f. Hardware Components
   g. Communication Options
   h. Fail Safe S7400H Overview
   i. Wiring, Power, and Grounding Considerations
   j. Software Components
3. Project Management
   a. Introduction to SIMATIC Manager
   b. Project Architecture
   c. Navigating the Views
   d. Toolbar Review
   e. Project Management
   f. Charts (CFC) and Matrix Overview
   g. HELP System and Documentation
4. Configuring Hardware (HW)
   a. System HW Components
   b. CPU Options and Safety Attributes
   c. Safety I/O Modules
   d. CPU and Module Parameterization
   e. Communications
   f. I/O Channel Naming
   g. Compiling, Downloading and Archiving a project
   h. On-Line Status and Monitor
5. Continuous Functions Charts (CFC)
   a. Introduction to CFC Editor
   b. Function block catalog
   c. Standard and Failsafe Blocks Libraries
   d. Channel Driver Function Blocks
   e. Standard and Failsafe Logic
   f. Modifying Application Logic
   g. On-Line test mode and modifying
   h. Online Maintenance Actions CFC
6. Safety Matrix
   a. Safety Matrix Overview
   b. Cause and Effect Programming
   c. Understanding an Existing Configuration
   d. Intersect Configuration
   e. Safety Instrumented Function Groups
   f. Safety Matrix Project Utilities
   g. Safety Matrix Operation Monitoring
   h. Safety Matrix Operator Control

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i. Status Detail Cause and Effect
j. Diagnosing Errors and Faults

7. System Troubleshooting
   a. LED Indicators
   b. Software Tools
8. Advanced Topics (optional)
   a. Setting Communications Interfaces
   b. Run Sequence
   c. Shutdown Logic
   d. Passivation and Reintegration
   e. Safety Program Information

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