

PLC APPLICATIONS FOR RIG SYSTEMS (SIEMENS)

"Master Siemens PLCs to Optimize Rig Automation and Safety Performance"

Schedule

Date	Venue	Fees
26 - 28 Aug 2026	Dubai, UAE	USD 2495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

Programmable Logic Controllers (PLCs) are the backbone of modern industrial automation, especially in rig systems where reliability, precision, and real-time response are critical. This 3-day intensive training equips engineers and technicians with practical knowledge and skills in Siemens PLC applications tailored for rig operations.

Participants will gain a thorough understanding of PLC architecture, programming, troubleshooting, and system integration specifically for oil and gas rig environments. With real-world examples and simulations, the course ensures hands-on experience in deploying Siemens PLC solutions for efficient and safe rig performance.

Objectives

By the end of this course, participants will be able to:

- Understand the architecture and components of Siemens PLC systems used in rig automation
- Develop, modify, and troubleshoot PLC programs using Siemens TIA Portal
- Interface PLCs with sensors, actuators, and rig subsystems
- Interpret I/O modules, ladder logic, and communication protocols
- Apply best practices in safety, diagnostics, and preventive maintenance

Why Attend

- Learn Siemens PLC applications specifically tailored for rig systems
- Gain hands-on programming skills using real or simulated environments
- Improve troubleshooting, commissioning, and system integration skills
- Enhance system reliability, automation, and rig safety
- Stay current with evolving technologies in oil & gas automation

Target Audience

This program is designed for:

- Electrical and instrumentation engineers
- Rig automation and control system technicians
- Maintenance personnel handling PLC-based rig equipment
- SCADA and DCS operators
- Automation professionals in the oil and gas sector

Individual Benefits

Key competencies that will be developed include:

- Proficiency in Siemens PLC hardware and software tools
- Programming and logic development using TIA Portal
- Diagnostic and fault-handling capabilities
- Integration of PLCs with rig-specific subsystems
- Ability to improve automation safety and efficiency

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved uptime and safety in rig automation systems
- Reduced troubleshooting time and maintenance errors
- Enhanced capability to manage and upgrade PLC-based systems
- Cost-effective solutions through optimized control and monitoring
- Greater internal expertise on Siemens PLC operations

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings - Deep dive into PLC concepts, Siemens architecture, and rig control logic
- Case Studies - Real-world examples of PLC implementations on rig equipment
- Workshops - Hands-on programming, simulation, and fault diagnosis using Siemens TIA Portal
- Peer Exchange - Group discussions on automation challenges in rig environments
- Tools - Preconfigured templates, logic diagrams, and diagnostic tools

Course Outline

Training Hours: 7:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Fundamentals of Siemens PLCs and Rig Applications

- Module 1: Introduction to PLC Systems (07:30 – 09:30)
 - PLC concepts and role in industrial automation
 - Overview of Siemens PLC families and rig control systems
 - Typical rig applications and automation needs
- Module 2: PLC Hardware and I/O Configuration (09:45 – 11:15)
 - Siemens S7 hardware components
 - Input/output modules and addressing
 - Interfacing with sensors and actuators on rigs
- Module 3: Workshop – Basic Setup and Configuration (11:30 – 01:00)
 - Powering up and configuring a Siemens PLC system
- Module 4: Peer Exchange – Common PLC Challenges on Rigs (02:00 – 03:30)
 - Discussing past failures and lessons learned

Day 2: PLC Programming and Logic Design

- Module 1: Programming in TIA Portal (07:30 – 09:30)
 - Introduction to TIA Portal environment
 - Project creation, hardware configuration, and addressing
 - Online and offline programming
- Module 2: Ladder Logic Programming (09:45 – 11:15)
 - Logic blocks, timers, counters, and memory
 - Rig-specific logic examples (e.g., mud pumps, hoist systems)
- Module 3: Workshop – Develop a Basic Rig Control Program (11:30 – 01:00)
 - Hands-on logic development in a rig simulation
- Module 4: Case Study – Alarm and Interlock System (02:00 – 03:30)
 - Creating a safety interlock for a rig subsystem

Day 3: Diagnostics, Communication, and System Integration

- Module 1: Troubleshooting and Diagnostics (07:30 – 09:30)
 - Fault detection and diagnostic tools in TIA Portal
 - Reading error codes and log data
 - Preventive maintenance and backup procedures
- Module 2: Communication and HMI Integration (09:45 – 11:15)
 - PROFINET, PROFIBUS, and Modbus in rig environments
 - HMI panel setup and data visualization
 - Linking PLCs with SCADA systems
- Module 3: Workshop – Full System Simulation (11:30 – 01:00)
 - Build a complete rig process using simulation tools
- Module 4: Final Review and Action Planning (02:00 – 03:30)
 - Project presentations and improvement strategies
 - Post-training action plan for workplace application

Certification

Participants will receive a Certificate of Completion in Siemens PLC Applications for Rig Systems, certifying their expertise in programming, diagnosing, and integrating Siemens PLCs for oil and gas rig automation and safety operations.

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