Programmable Logic Controllers (PLC) and SCADA System Training

Description

Course Description

This course is designed to benefit you with practical up-to-date information on the application of PLC's and SCADA to the automation and process control of plants and factories. It is suitable for people who have little or no exposure to PLC and SCADA but expect to become involved in so m e or all aspects of PLC installation and SCADA Programming. It aims to give practical advice fro m experts in the field, to assist you to correctly plan, program m and install a PLC with a shorter learning curve and m ore confidence.

Course Objective

PLC/SCADA systems are still both widely misunderstood and widely misapplied. This course, Fundamentals of PLC and SCADA Systems, is designed to provide engineers and technicians with the basic theoretical and practical understanding of PLC and SCADA systems and how this can be applied to optimize their systems in terms of safety, flexibility and costs.

Course Outline

Basic components of PLC

- Fundamentals principles
- CPU
- Memory
- I/O section and addressing
- Digital I/O modules
- Analog I/O modules

PLC programming

- Ladder logic instructions
- Basic arithmetic instructions

- Matrix logic
- File or block manipulation
- Jump, skips and subroutines
- PLC instruction sets
- Memory organisation
- Input/output addressing
- Duplicate coils
- Timers

Installation Practices

- Interference or noise reduction
- Cable spacing and routing
- Earthing and grounding
- Safety circuits
- Control room requirements and layout

Code quality and maintenance

- Program maintenance
- Change procedures
- Defect detection
- Quality measurement and demonstration

Advanced programming

- Matrix logic
- Multiplexing
- Coding/decoding

Analog control

- Analog inputs
- Signal filtering
- Analog control

Fault tolerance

- Improving system availability
- Hot standby systems
- Cold standby

Serial Data Communications

- RS-232/485 Standards
- Modbus Protocol
- Local Area Networks
- Ethernet
- Token Bus

Safety related systems

- Safety lifecycle
- Systematic failures/rates
- Voting systems
- Software reliability
- Field equipment

Upgrading Strategies

Simulation and testing

- Factory acceptance testing (FAT)
- Transport and reassembly
- Simulation packages
- Physical test panels
- I/O emulation systems

Problem Isolation and Testing

SCADA Hardware

- Field level Instrumentation and control
- Marshalling terminals and RTUs
- Communication System
- Master Stations

SCADA Software

- Communications protocol
- Data objects
- Interchangeability
- Proprietary systems