

PLC and SCADA Technologies - IC-71 **Instrumentation and control-Electrical Engineering**

Supervisory Control and Data Acquisition (SCADA) systems

About the course:

This workshop provides engineers and technicians with the basic theoretical and practical understanding of PLC and SCADA systems. It traces the evolution of the PLC as an intelligent 'black box' replacement for the relay panel and how, with the advent of modern communications architectures, it may be combined with Supervisory Control and Data Acquisition (SCADA) systems to allow stand-alone control systems to be configured. Throughout the workshop, participants will learn active participation using exercises, questionnaires, and practical PC-based simulation (LogixPro), covering basic ladder logic programming, hardware diagnostics and implementation of various communication strategies. Participants will also examine the basic requirements of a safety PLC and the various voting system architectures

You will learn

- Describe the fundamental principles of the PLC
- Identify the basic components
- Write a ladder logic program
- Explain the basics of advanced programming according to IEC 61131-3
- Compare different methods of analog processing
- Apply common-sense installation practices
- Examine the different components of a SCADA system
- Describe the basic principles of serial communications
- Evaluate the requirements for PLC-to-SCADA communications
- Distinguish the specific requirements of the PLC in safety-related applications

Course Content

- Introduction to control systems
- SCADA versus DCS
- PLC environmental enclosures
- Processing and scanning
- Digital processing
- Analog processing
- Installation practices
- Interference or noise reduction
- Cable spacing and routing
- Earthing and grounding
- Binary and hexadecimal numbering systems
- The IEC 61131-3 standard
- Ladder logic diagrams
- Functional block diagrams
- Derived function blocks
- Structured text
- Instruction lists
- Sequential function chart
- SCADA basics
- SCADA set-up and simulation
- System architecture
- Communication strategies
- Asynchronous transmission
- Coding
- The RS 232 standard
- The RS 485 standard
- Modbus
- Safety PLCs
- Voting system architectures

Course Duration

5 Days