



PLC, Telemetry & SCADA Technologies



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Introduction:

This is a highly relevant, industrially based training course that will update the skills and knowledge of Technicians and Engineers alike. This course is 'hands-on' using industry-standard PLC's in a simulated environment. Through this approach, the delegate will progress from learning the fundamentals of PLC application to writing, debugging, and finally designing their programs.

Radio and wire-based telemetry systems, essential for an understanding of modern communication methods deployed in the field are also studied and explained. These are vital for a comprehensive understanding in their use with not only programmable controllers but any Instrumentation / Controller remote application.

This course also includes a study of modern SCADA technologies. Again, together with a hands-on approach using a modern industrially compliant SCADA software package, the delegate will acquire new and updated skills essential in any fast-moving industrial environment

Targeted Groups:

- Electrical Engineers and Technicians
- Control Engineers and Technicians
- Communication Engineers and Technicians
- IT and Software Engineers and Technicians
- Design Engineers
- Instrumentation Engineers and Technicians
- Electricians
- Instrument and Process Control Engineers and Technicians
- Mechanical Engineers and Technicians
- Operations Engineers
- Process Engineers and Technicians
- Production Professionals
- Project Design Professionals
- System Integrators
- Other Professions Managers, Engineers, Technicians involved in the Control and Process Industries who require a fuller understanding of that industry

Course Objectives:

At the end of this course the participants will be able to:

- Give an understanding of the operation, architecture, and use of an industry-standard PLC for Control purposes
- Investigate the operation of the PLC through designing, building and testing typical programs in the ladder programming language using industry-standard PLC's in a simulated environment
- Become familiar and confident with the PLC, Telemetry and SCADA environments
- Understand the concepts of Radio Telemetry and acquire the knowledge relating to the application, limitation, and use of frequency bands used
- Gain an understanding and knowledge of common wire-based communication protocols
- Become familiar and knowledgeable with an industry compliant SCADA software package

Targeted Competencies:

- A study and explanation of the PLC for Control purposes
- Understanding through 'hands-on' approach using industry-standard PLC's in a simulated environment of PLC programming - design and debugging
- Investigation of Radio telemetry methods, frequencies used and application and limitation of each frequency band
- Study of commonly used wire-based telemetry methods and protocols such as RS232 and RS485
- Investigation of SCADA, its structure, and application. Understanding of a typical SCADA application through a hands-on approach using an industry compliant SCADA software package

Course Content:

Unit 1: Introduction to Control Strategies:

- Continuous Control Systems
- Sequential Control Systems
- Relay Based Systems
- Introduction to PLC Systems
- PLC VS Relay Systems
- Programming Formats
- Logical Continuity
- Software Familiarisation
- Introduction to Industry Standard PLC Programming Software

Unit 2: PLC Architecture:

- System Architecture
- Memory and I/O Types
- Scanning Algorithms
- Program Scan Cycle

Unit 3: Radio Telemetry Systems:

- Introduction
- Elements of a Radio Link
- The Radio Spectrum
- Frequency Ranges
- System Design Considerations

Unit 4: PLC Programme Development:

- Analysis of PLC Programs
- Design Methodology and Development of PLC Programs
- Timer Method of Program Development

Unit 5: Serial Data Communications:

- Communication Methods Simplex, Half-Duplex, Full-Duplex
- RS232 Standard
- RS422 Standard
- RS485 Standard

Unit 6: Analog I/O and Processing:

- Analog Inputs and Outputs
- A/D and D/A Conversion
- Programming Analogue Modules and Advanced Instructions

Unit 7: Introduction to SCADA:

- System Architecture
- Configuration and Operation
- Introduction to Industry Standard SCADA Software
- Design and Development of a new SCADA Project
- Local Area Networks LAN's