Training Title
PLC & SCADA SYSTEMS

Training Duration
5 days

Training Venue and Dates

IC012	PLC & SCADA Systems	5	29 Jan - 02 Feb 2024	$5,500	Dubai, UAE

Training Fees
$5,500 per participant for Public Training includes Materials/Handouts, tea/coffee breaks, refreshments & Buffet Lunch

Training Certificate
Define Management Consultancy & Training Certificate of course completion will be issued to all attendees.

TRAINING OVERVIEW

TRAINING DESCRIPTION:
SCADA is used around the world to control all kinds of industrial processes — SCADA can help you increase efficiency, lower costs and increase the profitability of your operations. SCADA is not a specific technology, but a type of application. SCADA stands for Supervisory Control and Data Acquisition.

In fact, many SCADA applications use PLCs as the R TU of choice, when communicating with field devices. This comprehensive course covers the essentials of SCADA and PLC systems, which are often used in close association with each other.

This course is designed to benefit the participants 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 some or all aspects of PLC installation and SCADA Programming. It aims to give practical advice from experts in the field, to assist you to correctly plan, programme and install a PLC with a shorter learning curve and more confidence.

While this course is ideal for engineers who are new to PLCs and SCADA, much of the contents and additional material in the extensive manual will be of value to those who already have the basic skills but need a wider perspective for larger and more challenging tasks ahead.

The information contained in this course advances from the basics to challenge even the most experienced engineer in the industry today.

Selection of real-world case studies is used to illustrate the key concepts with examples of real-world working PLC and SCADA systems in the water, electrical and processing industries and this course will be an excellent opportunity to network with your peers as well as gain significant new information and techniques for your next SCADA project.

Although the emphasis of the course will be on practical industry topics highlighting recent developments using case studies and the latest application of PLC and SCADA technologies the fundamentals of PLC and SCADA systems will be covered. The course is aimed at those who want to be updated on the latest developments in PLC and SCADA systems and want to get a solid appreciation of the fundamentals of PLC, SCADA and Telemetry design, installation, and troubleshooting.

This course provides an in-depth introduction to Supervisory Control and Data Acquisition (SCADA) / Programmable Logic Controllers systems. Participants will learn how remote sensing and actuation are combined with modern communication techniques to effectively monitor and control very large industrial processes—like those used in oil fields, pipelines, and electrical power systems. This course will cover most major SCADA applications, SCADA system components, and architecture.

The course defines Programmable Logic Controller (PLC) and architecture, configuration, installation, maintenance, and programming.

TRAINING OBJECTIVES:

At the end of this course participants will understand:

- ➤ Describe the various components of a SCADA system.
- ➤ Fundamentals of SCADA systems
- ➤ Sketch out a SCADA system for potential application in your industry.
- ➤ Evaluate the benefits of several examples of Remote Terminal Units (RTUs), Master Terminal Units (MTUs), and communications methods.
- ➤ Human Machine Interface
- ➤ Fundamentals of PLC hardware and software
- ➤ How to write a simple PLC program
- ➤ How to troubleshoot a PLC system
- ➤ How to engineer a complete PLC system
- ➤ The essentials of IEC 61131-3
- ➤ Specify PLC hardware and installation criteria.

- ➤ Describe PLC software structure, Ladder Logic, Function Block System (FBS), Instruction List (IL) as per IEC 1131.
- ➤ Write medium level PLC programs.
- ➤ Troubleshoot a typical PLC system.

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- ➢ Specify and engineer PLC systems.
- ➢ Understand the fundamentals of SCADA systems.
- ➢ Gain knowledge of the key industrial communication protocols
- ➢ Learn how to set up industrial data communications networks.
- ➢ Understand the different industrial communications networks used.
- ➢ Learn how to effectively apply SCADA System security.

WHO SHOULD ATTEND:

- • Instrumentation and Control
- • Process Control Engineers
- • Electrical Engineers
- • Consulting Engineers
- • Design Engineers
- • Control System Sales Engineers
- • Maintenance Supervisor
- • Control System application engineers
- • Project Engineers
- • Technicians
- • Plant Engineers
- • IT Personnel

TRAINING METHODOLOGY:

A highly interactive combination of lectures and discussion sessions will be managed to maximize the amount and quality of information and knowledge transfer. The sessions will start by raising the most relevant questions and motivate everybody to find the right answers. You will also be encouraged to raise your own questions and to share in the development of the right answers using your own analysis and experiences. Tests of the multiple-choice type will be made available on a daily basis to examine the effectiveness of delivering the course.

Very useful Course Materials will be given.

- • 30% Lectures
- • 30% Workshops and work presentation
- • 20% Group Work& Practical Exercises
- • 20% Videos& General Discussions

TRAINING OUTLINE

Day 1
FUNDAMENTALS OF PLC
- • PLC system hardware
- • Input & output Devices
- • I/O modules

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- Processor module
- Power Supply
- Programming modules/ tools

PLC Programming Techniques
- How a PLC can be programmed
- PLC program Scans
- Identification of input/output and bit addresses
- PLC programming methods
- Bit storage
- Timers
- Counters
- Numerical applications
- Combinational and event-driven logic
- IEC 1131-3, towards a common standard
- Programming software

Day 2

PLC Data COMMUNICATION PROTOCOLS AND STANDARDS
- RS-232/RS485
- Industrial Ethernet
- Industrial Protocols such as Modbus TCP/IP
- Local Area Networks (LANs)
- Network Topologies
- Media Access Control Methods
- Token Ring & Token bus

Day 3

PLC Maintenance & Troubleshooting
- Preliminary Checks
- Data Communication Links
- Review of Noise in the System
- Program Maintenance
- Simplifying Routine Adjustments
- Change Procedures
- Programming Tools

Day 4

FUNDAMENTALS OF SCADA
- Terminology and overview
- SCADA System hardware

- **Communication Architecture**

Day 5
SCADA SOFTWARE
- **Industry Standard protocols**
- **Displays and MMI's**
- **Configuration of SCADA System**
- **Best Practice configuration of Alarms**
- **Rules of SCADA design**

NOTE:
Pre & Post Tests will be conducted.
Case Studies, Group Exercises, Group Discussions, Last Day Review &Assessments will be carried out.

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