Global Horizon
TRAINING CENTER

Training Course:
Communication Protocols and Networking for Microprocessor

17 - 21 August 2025
Dubai (UAE)
Residence Inn by Marriott Sheikh Zayed Road, Dubai

Training Course:
Communication Protocols and Networking for Microprocessor

Training Course code: EN236109 From: 17 - 21 August 2025 Venue: Dubai (UAE) - Residence Inn by Marriott Sheikh Zayed Road, Dubai Training Course Fees: 5300 Euro

Introduction

In today's modern electrical infrastructure, microprocessor-based devices such as intelligent electronic devices IEDs, programmable logic controllers PLCs, and remote terminal units RTUs play a vital role in automation, control, and protection systems. The efficient operation of these devices depends heavily on robust and standardized communication protocols, reliable networking structures, and compatible interface technologies.

This training program is designed to provide a structured understanding of the key communication protocols and networking fundamentals used in electrical and automation systems. It focuses on essential protocols such as Modbus, IEC 61850, IEC 60870-5-103/104, and DNP3, and explores how these protocols function within a networked environment using various physical and logical interfaces.

Target Audience

- Electrical engineers
- Automation and control specialists
- SCADA and substation engineers
- Technical consultants and supervisors
- Professionals involved in integration, commissioning, or design

Objectives

By the end of the program, participants will:

- Understand key communication protocols used in modern electrical systems
- Recognize the architecture and structure of communication networks in power systems
- Gain familiarity with common interface types and network layers
- Understand how microprocessor-based devices communicate within substations and automation systems
- Learn the basics of protocol selection, configuration, and troubleshooting

Training Program Outline

Day 1: Overview of Communication in Electrical Systems

- Introduction to microprocessor-based devices IEDs, PLCs, RTUs, relays
- The need for communication in power and automation systems
- Basics of data communication and information exchange
- OSI Model and TCP/IP stack simplified view
- Role of communication in SCADA and protection systems

Day 2: Communication Interfaces and Physical Media

- Overview of serial communication RS-232, RS-485
- Ethernet-based communication: structure and advantages
- Overview of fiber optics and wireless communication
- Interface converters and gateways
- Considerations for selecting physical interfaces

Day 3: Introduction to Networking in Electrical Systems

- Basics of networking LAN, WAN, IP addressing, switches, routers
- Network design principles in substations and plants
- Communication paths between devices and systems
- Redundancy and reliability in communication networks
- Cybersecurity basics and network segmentation

Day 4: Communication Protocols for Microprocessor-Based Devices

- Modbus RTU and Modbus TCP
- IEC 60870-5-103 and IEC 60870-5-104
- DNP3: key features and applications
- IEC 61850 overview: logical nodes, GOOSE, MMS
- How to choose the right protocol for your system

Day 5: Integration and Troubleshooting Concepts

- Typical integration process for electrical devices
- Protocol configuration and parameter setting
- Communication testing and verification concepts
- Common communication issues and root causes
- Documentation and maintenance of communication systems

Registration form on the Training Course: Communication Protocols and Networking for Microprocessor

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Payment Method

- ☐ Please find enclosed a cheque made payable to Global Horizon
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