Practical Industrial Data Communications and Telecommunications Course

Venue Information

Venue: London UK

Place:

Start Date: 2026-01-27

End Date: 2026-01-31

Course Details

Net Fee: £4750.00

Duration: 1 Week

Category ID: EAPET

Course Code: EAPET-54

Syllabus

Course Description

Industrial data communication operates in environments that present unique challenges such as electromagnetic interference (EMI), extended distances, and physical obstacles. Unlike standard office networks, industrial systems demand robust solutions tailored for reliability and process control. Specialized communication devices, designed from years of field experience, have emerged to address these challenges effectively. With a wide range of standards available — from Foundation Fieldbus, Profibus, and DeviceNet to Industrial Ethernet — the focus is not on choosing a "best" technology, but on selecting the most suitable one for the application at hand. Success relies on best practices in design, installation, and commissioning to ensure fault-free performance. This course compiles proven techniques, insights, and troubleshooting strategies developed through extensive real-world experience.

Course Objective

technologies such as leased services (T1/T3, Frame Relay, ADSL) versus private solutions like fiber optics and short-haul modems. Security issues unique to industrial networks will also be a key focus. Additionally, participants will gain hands-on experience with fundamental communication principles, hardware interfaces like RS232, ASCII-based protocols, Modbus, and modern peer-to-peer or network communication systems for smart instruments and devices.

Course Outline

- Application of traditional and modern serial standards (EIA-232, 422, 423, 485) in industrial settings.
- Understanding proprietary PLC networks and their operation.
- Overview of Local Area Network (LAN) topologies and protocols.
- Comparison of media access methods: CSMA/CD, token passing, master/slave.
- Design approaches for Ethernet-based LANs.
- Evaluation of Ethernet varieties suitable for industrial use.
- Selection of Ethernet hardware to avoid obsolescence.
- Explanation of the Open Systems Interconnection (OSI) model.
- LAN, WAN, intranet, and Internet fundamentals.
- Impact of telephone system structure on industrial networking.
- Analog dial-up connections and modem standards.
- Modern digital WANs and corporate intranet services.
- Fiber-optic network basics, including cable selection for industrial floors.
- TCP/IP addressing, protocols, and troubleshooting techniques.
- Building and managing industrial intranet web servers.
- Guidelines for safe use of web technologies in process control.
- Network security principles and best practices for industrial systems.
- Smart instrument communication systems such as HART.
- Fieldbus protocols and configurations.
- Public network transport technologies overview.
- Wide Area and converged networking (PSTN, PBX, Internet, Intranet).
- Wireless communication principles and industrial characteristics.
- Enterprise-level data communication (ERP, MES, SCADA integration).