Distributed Control System (DCS) Training

Course Price

£3050

Course Description

Different plants have different control requirements and it is generally acknowledged that there is no one technique that will solve all the control problems that are manifest in a modern plant. Despite the rapid growth in the use of PLC and SCADA systems, the modern Distributed Control System (DCS) still offers many benefits. These include: increased integrity (reduced process downtime); reduced engineering time; abnormal situation management; intelligent alarm management; and pre-engineered solutions for the implementation of Advanced Process Control (APC) strategies.

Course Objectives

This workshop, Distributed Control Systems is designed to provide engineers and technicians with an overview of the modern DCS and how to deal with a variety of issues concerning alarm management, operator performance feedback, improved control, and cyber security issues.

This workshop also serves as a suitable precursor to vendor training.

On successful completion of this workshop delegates will have:
- ability to input to the design and specification of the DCS and process control system
- understanding of the key ergonomic issues in design of operator displays
- detail the key trends that underpin modern distributed control systems
- a better understanding of the design and creation of consistent and effective alarm philosophies
- a recognition of how to deal with human problems in interfacing to alarm systems
- the ability to benchmark your alarm system performance
- the ability to correctly apply both open and closed Loop Tuning
- gain insight into the challenges faced by cyber security

Who Should Attend

- Professionals involved in designing, selecting, sizing, specifying, installing, testing, operating and maintaining Distributed Control systems.
  - Automation Engineers
  - Chemical Engineers
  - Consulting Engineers
• Design Engineers
• Electrical Engineers
• Installation and Maintenance Technicians
• Instrument and Process Control Engineers and Technicians
• Maintenance Engineers
• Mechanical Engineers and Technicians
• Operations Engineers
• Process Engineers
• Production Managers
• Project Managers
• System Integrators

Professionals who want a better understanding of the subject matter

Course Content

DAY 1
1. Introduction to control systems
   • Acronyms and abbreviations
   • Programmable Logic Controllers
   • Smart instruments
   • Distributed Control Systems
   • SCADA systems
   • Traditional architectures
   • SCADA versus DCS
2. Basic data communications and networks
   • Bits and bytes
   • Binary numbering
   • Resolution
   • Hexadecimal
   • Synchronous versus asynchronous Transmission protocols
   • ASCII code
   • UARTs

DAY 2
• Network topologies
3. PLC technology
   • Logic functions
   • Ladder logic programming
   • Functional block programming
   • Digital processing
   • Analog processing
4. Regulatory control
   • Proportional control

DAY 3
• PI control
• Stability
• Loop tuning
• Cascade Control
• Feed forward control
5. Alarm management (52)
• Case studies
• Common issues
• Time to respond

DAY 4
• Alarm displays
• Alarm generation
• HMI issues
• ISA-18.2
6. Installation Practices (39)
• Interference or noise reduction
• Cable spacing and routing
• Earthing and grounding
• Fibreoptics
7. Fieldbus systems (96)
• Network considerations
• Modbus
• Profibus

DAY 5
• Foundation Fieldbus
• DNP and IEC 60870
8. Cyber security (41)
• Attacks against SCADA systems
• Developing a SCADA security strategy
• Countermeasures

CPD Unit

Continuing Professional Development

35 HOURS CPD