**Distributed Control System (DCS)**

**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
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