

Distributed Control Systems (DCS)

AIMS OF THE COURSE

This course is designed for *Engineers* and/or *Senior Technicians* responsible for the day-to-day maintenance of Distributed Control Systems at their respective plants. Its purpose is to provide these key personnel with a solid and consistent grounding in the technology, topology and protocols commonly used in modern DCS systems better enabling them to maintain, fault-find and implement minor configuration changes on their own systems.

AGENDA

The course will be a classroom-based review of the basic concepts, principles, standards and protocols used in the modern DCS and SCADA systems - with sections covering hardware, software and networks.

Course Outline

The History and Evolution Of DCS Control Systems.

What is a DCS?

- Definition

How Does a DCS work?

- Main Components
- The Highway
- Principles of operation

What is SCADA?

- Definition

How does SCADA work?

- Main Components
- Principles of operation

How does DCS and SCADA work together?

- Operator Interfaces
- Engineering Workstations
- Distributed Processing Units (DPU)

Review of Computer Operating Systems

- Unix
- Windows NT

Review of Networking Principles

- LAN and WAN systems
- Network Topology - Bus, Star, Ring, Token Ring, Token Bus
- Standard Protocols - Ethernet, ARC net, ConBus, Field Bus
- Other Protocols used in DCS.

Review of Measurement & Control Principles

- Measurement of Pressure, Level, Temperature and Flow
- Special measurements - Analysers, Speed, etc
- Control system lags
- PID Control
- Sequence Control

DCS Hardware

- Input Hardware - Analogue, Discrete, RTD, Thermocouple, Special
- Output Hardware - AC, DC, Regulating
- Control and Processing Hardware
- Communication hardware

DCS Software

- Object based software
- Ladder Logic
- Function Blocks

DCS Configuration

- Control Constant Databases
- Making minor changes to the configuration

Techniques to improve Fault Tolerance

- Hardware implemented systems - Redundancy, Separation, Segregation
- Software Implemented - Error trapping, SIFT

Maintaining and Managing a DCS

- Routine maintenance
- Spares Inventory
- Control of temporary changes
- Alarm Log Analysis
- Fault finding - the Golden Rules

For any further information please contact us at:

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