TECHNICAL EDUCATION ACADEMY

School of Engineering

COURSE PROGRAMME

000185

ATIC002 - Distributed Control Systems Operations

Recent trends in globalization, mobile devices, remote operations, and system integration are blurring the lines between distributed control systems (DCS) and supervisory control and data acquisition (SCADA).



Learn from the Best in the Business!

Course overview

Duration: 5 days / 40 hours · Intermediate level

Why take this course

Recent trends in globalization, mobile devices, remote operations, and system integration are blurring the lines between distributed control systems (DCS) and supervisory control and data acquisition (SCADA). To complicate matters, some vendors position their products either as DCS or SCADA depending upon the actual application. This course has been designed with these recent trends in mind while covering the most important components of a DCS in detail. Emphasis is placed on DCS operation, networking, HMI, and Alarms. Topics of importance to field Engineers and Operators such as Maintenance and Troubleshooting are covered. Finally, state of the art advanced process controllers and latest trends are also covered.

Who it is for and how it helps

Engineers and technicians requiring knowledge of automation and distributed control.

What you will learn

- Explain the use of sensors, instrumentation, and process control
- Explain DCS Organization and operation
- List and explain the most important Networking, HMI, and Alarm features of DCSs
- Use more efficiently Maintenance and Troubleshooting procedures
- Utilise Advanced Process Controllers in DCSs
- Appreciate latest trends related to DCSs

Curriculum

Modules 01–02

01 Review of Process Control and Introduction to DCS

- Review of sensors, instrumentation, and process control systems
- Control Algorithms
- Distributed Control Systems: Introduction
- Overview, Features, Advantages, Where used
- Functions, Architecture, I/O, components,
- Hardware, software, system interfacing
- Programmable Logic Controller (PLC) – brief overview
- supervisory control and direct digital control
- Supervisory Control and Data Acquisition (SCADA) – brief overview
- DCS, PLC and SCADA compared

02 DCS Configuration and Networking

- Distributed Control Systems: Structure and Configuration
- DCS block diagrams, components, architecture, redundancy concepts
- DCS hardware configuration
- DCS Hardware & Software Internals
- Basic DCS Controller Configuration
- Sequential Controllers for Batch Processing
- Controllers for Continuous Processes: Function Blocks
- Hierarchical Structure of control systems: ISA-95
- Data Communications and Networking
- Signal Transmission
- Physical Network Structures
- Logical Network Structures
- Communication Standards
- Fieldbus Operation: Foundation Fieldbus, Profibus
- Wide Area Network (WAN) communications: Modbus
- Control in the Field (CIF)
- DCS applications and case study

Curriculum

Modules 03–05

03 HMI, Alarms, and DCS Operation

- Human Machine Interfaces: Introduction, features, requirements
- Plant mimic and animation
- DCS Operator Stations
- Interface Categories
- Recorders, Loggers, Trend Displays, and Data Archiving
- HMI in the Control Room and in the Field: Mobile and remote devices
- Alarm Management - Key Requirements and Alarm System Functions
- Alarms phylosophy, control & Management
- Development and Applications, Logs, trends and reports
- DCS Operation
- Operational view of DCS
- Role of operators
- Integration and Optimization of DCSs
- DCS Configuration
- DCS Integration

04 Maintenance and Troubleshooting

- Maintenance Considerations
- Maintenance Requirements: System and Components
- Procedure for Checking Control Loop Calibration
- Identify proper tools and test equipment for troubleshooting

05 Troubleshooting

- Proper troubleshooting methods
- Identify typical communication malfunctions and faults
- Identifying failures, malfunctions, and faults
- Diagnostics through DCS Modules, and Programs (code)
- Diagnostics through Internal internal Variables and Bits of DCS
- Diagnostics of Communication faults

Curriculum

Modules 06–08

06 Advanced Process Controllers

- Feed forward Control
- Cascade Control
- Statistical Process Control

07 Latest DCS Trends

- Monitoring and control in the Field
- Industrial Internet
- Internet of Things
- Mobile and remote devices

08 Cloud Processing

- Monitoring and control in the Cloud

Joining the programme

Contact the Academy and quote course code 000185 to confirm dates, delivery format, prices and enrolment terms.

Training for your team

Tell us your business goals, the roles and number of participants, and your preferred dates and location. This will help us discuss the right training option.

Preparing for the programme

The published programme does not specify any prerequisites. Contact us before enrolling to confirm how to prepare.

Discuss your training needs

mail@tecedu.org
www.tecedu.academy

Learn from the Best in the Business!