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Systems

EcoStruxure Hybrid DCS

COURSE CONTENT

GET IN TOUCH

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About Multisoft

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About Course

EcoStruxure Hybrid DCS Training offers a structured understanding of distributed process automation, covering system architecture, hardware, engineering configuration, control applications, visualization, alarms, trends, industrial communication, diagnostics, and maintenance. The course combines conceptual instruction with application-oriented exercises to help participants understand how different DCS components work together across the engineering and operational lifecycle of an industrial process control system.

Module 1: Introduction to EcoStruxure Hybrid DCS

- ✓ Overview of Distributed Control Systems
- ✓ Introduction to EcoStruxure Hybrid DCS
- ✓ DCS concepts and process automation principles
- ✓ Key system capabilities
- ✓ Engineering and operator environments
- ✓ Typical industrial applications
- ✓ Understanding the system lifecycle

Module 2: System Architecture and Components

- ✓ EcoStruxure Hybrid DCS architecture
- ✓ Engineering stations and operator stations
- ✓ Controllers and automation servers
- ✓ System servers and client stations
- ✓ Distributed system concepts
- ✓ Network architecture
- ✓ Field-level and supervisory-level components
- ✓ System topology considerations
- ✓ Redundancy concepts

Module 3: Engineering Environment and Project Structure

- ✓ Introduction to the engineering environment
- ✓ Creating and managing projects
- ✓ Understanding project hierarchy

- ✓ Application organization
- ✓ Plant and process structures
- ✓ Engineering navigation
- ✓ Libraries and reusable objects
- ✓ Templates and object instances
- ✓ Project configuration workflow
- ✓ Managing engineering changes

Module 4: Control System Hardware Configuration

- ✓ Controller hardware overview
- ✓ I/O architecture
- ✓ Hardware catalog and device selection
- ✓ Creating hardware configurations
- ✓ Configuring controller modules
- ✓ Adding and configuring I/O modules
- ✓ Channel configuration
- ✓ Signal assignment
- ✓ Hardware addressing
- ✓ Controller and I/O diagnostics
- ✓ Hardware redundancy considerations

Module 5: Communication Networks and Device Integration

- ✓ Industrial communication fundamentals
- ✓ Ethernet-based communication
- ✓ Modbus TCP communication

- ✓ Modbus serial communication concepts
- ✓ Device addressing
- ✓ Communication configuration
- ✓ Connecting controllers and field devices
- ✓ Third-party device integration
- ✓ Communication status monitoring
- ✓ Network troubleshooting concepts

Module 6: Process Control Configuration

- ✓ Understanding control applications
- ✓ Process variables and signals
- ✓ Digital and analog signal handling
- ✓ Engineering units and scaling
- ✓ Basic process control functions
- ✓ PID control principles
- ✓ Controller configuration
- ✓ Setpoint and process variable management
- ✓ Manual and automatic operating modes
- ✓ Control loop implementation
- ✓ Testing control applications

Module 7: Control Strategies and Function Blocks

- ✓ Function block concepts
- ✓ Standard control blocks
- ✓ Logic blocks

- ✓ Analog processing blocks
- ✓ Boolean operations
- ✓ Timers and counters
- ✓ Interlocks and permissives
- ✓ Motor control strategies
- ✓ Valve control strategies
- ✓ Pump control applications
- ✓ Cascade control concepts
- ✓ Reusable control strategies
- ✓ Testing and validating control logic

Module 8: Operator Interface and HMI Configuration

- ✓ Operator interface architecture
- ✓ HMI configuration principles
- ✓ Creating process graphics
- ✓ Configuring graphical objects
- ✓ Dynamic object behavior
- ✓ Process variable visualization
- ✓ Navigation between displays
- ✓ Faceplates and control objects
- ✓ Operator commands
- ✓ Status and condition indication
- ✓ Display organization
- ✓ Runtime visualization
- ✓ HMI testing and verification

Module 9: Alarms, Events, and Process Monitoring

- ✓ Alarm management fundamentals
- ✓ Alarm configuration
- ✓ Alarm priorities
- ✓ Alarm conditions
- ✓ Alarm acknowledgement
- ✓ Alarm display concepts
- ✓ Event management
- ✓ Operator event handling
- ✓ Alarm monitoring
- ✓ Alarm analysis principles
- ✓ Testing alarm functionality

Module 10: Trends, Historical Data, and Reporting

- ✓ Process trend concepts
- ✓ Real-time trending
- ✓ Historical trending
- ✓ Selecting process variables
- ✓ Trend display configuration
- ✓ Data collection concepts
- ✓ Historical process information
- ✓ Event and alarm history
- ✓ Data visualization
- ✓ Operational analysis using trends
- ✓ Reporting concepts

Module 11: Sequential Control and Process Operations

- ✓ Introduction to sequential control
- ✓ Sequence structure
- ✓ Steps and transitions
- ✓ Process conditions
- ✓ Sequence execution
- ✓ Equipment coordination
- ✓ Start and stop sequences
- ✓ Interlocks within sequential operations
- ✓ Monitoring sequence status
- ✓ Handling sequence interruptions
- ✓ Testing sequential applications

Module 12: System Diagnostics, Maintenance, and Troubleshooting

- ✓ System diagnostic concepts
- ✓ Controller diagnostics
- ✓ I/O diagnostics
- ✓ Communication diagnostics
- ✓ Device status monitoring
- ✓ Identifying system faults
- ✓ Troubleshooting control applications
- ✓ Troubleshooting communication problems
- ✓ Alarm-based fault investigation
- ✓ Maintenance considerations

- ✓ System health monitoring
- ✓ Common troubleshooting scenarios

Module 13: System Security, Backup, and Project Management

- ✓ Industrial control system security fundamentals
- ✓ User access concepts
- ✓ Roles and permissions
- ✓ Engineering access considerations
- ✓ Project backup
- ✓ Project restore procedures
- ✓ Configuration management
- ✓ Version management concepts
- ✓ Managing project modifications
- ✓ Documentation practices
- ✓ System recovery considerations
- ✓ Operational and engineering best practices

Module 14: Integrated Engineering Exercises and Industrial Applications

- ✓ Creating an automation project structure
- ✓ Configuring controller and I/O components
- ✓ Creating process signals
- ✓ Implementing control logic

- ✓ Configuring PID loops
- ✓ Implementing motor and valve control
- ✓ Creating process graphics
- ✓ Configuring alarms and trends
- ✓ Testing operator interactions
- ✓ Diagnosing configuration issues
- ✓ Backup and project management exercise
- ✓ Integrated process automation scenario