

ABB 800xA Engineering

COURSE CONTENT

GET IN TOUCH



Multisoft Systems
B - 125, Sector - 2, Noida



(+91) 9810-306-956



info@multosoftsystems.com



www.multosoftsystems.com

About Multisoft

Train yourself with the best and develop valuable in-demand skills with Multisoft Systems. A leading certification training provider, Multisoft collaborates with leading technologies to bring world-class one-on-one and certification training. Intending to empower professionals and businesses across the globe, we offer more than 1500 training courses, which are delivered by Multisoft's global subject matter experts. We offer tailored corporate training, a comprehensive learning solution with lifetime e-learning access, after-training support and globally recognized training certificates.

About Course

The ABB 800xA Engineering Training from Multisoft Systems is a specialized program focused on the engineering and configuration of ABB System 800xA for industrial automation and process control environments. The course provides practical exposure to Plant Explorer, Aspect Object technology, AC 800M controllers, Control Builder, I/O configuration, control applications, process graphics, alarms and events, communication, diagnostics, and system maintenance. Through instructor-led sessions and hands-on exercises, participants gain the technical understanding required to perform common engineering, configuration, commissioning, and troubleshooting activities in ABB 800xA-based automation projects.

Module 1: Introduction to ABB System 800xA

- ✓ Overview of industrial automation and distributed control systems
- ✓ Introduction to ABB Ability™ System 800xA
- ✓ System 800xA concepts and capabilities
- ✓ Control, engineering, operations, and information functions
- ✓ Typical industrial applications of System 800xA
- ✓ Understanding the engineering lifecycle
- ✓ Overview of the training environment

Module 2: System 800xA Architecture and Engineering Environment

- ✓ System 800xA architecture overview
- ✓ Client-server architecture concepts
- ✓ System nodes and functional components
- ✓ Engineering, control, and operator environments
- ✓ Connectivity and communication layers
- ✓ Aspect Object technology concepts
- ✓ System topology and redundancy overview
- ✓ Engineering workflow within System 800xA

Module 3: Engineering Workplace and Project Structure

- ✓ Introduction to Engineering Workplace
- ✓ Navigating workplace environments
- ✓ Understanding objects, aspects, and structures

- ✓ Functional Structure
- ✓ Control Structure
- ✓ Location Structure
- ✓ Library Structure concepts
- ✓ Creating and organizing engineering objects
- ✓ Object properties and aspect configuration
- ✓ Engineering documentation and navigation practices

Module 4: Control Network and System Connectivity

- ✓ Industrial network concepts within System 800xA
- ✓ Control network architecture
- ✓ Controller and server communication
- ✓ Network topology considerations
- ✓ IP addressing concepts
- ✓ Node and connectivity configuration
- ✓ Communication paths between system components
- ✓ Network redundancy concepts
- ✓ Connectivity verification
- ✓ Basic network troubleshooting

Module 5: Hardware Configuration and I/O Engineering

- ✓ Overview of ABB controller families used with System 800xA
- ✓ Controller configuration principles
- ✓ Hardware tree and hardware organization
- ✓ Adding controllers and communication interfaces

- ✓ Configuring I/O modules
- ✓ Digital input and output configuration
- ✓ Analog input and output configuration
- ✓ Channel parameter configuration
- ✓ I/O signal mapping
- ✓ Hardware status monitoring
- ✓ Download and verification concepts
- ✓ Diagnosing hardware and I/O configuration issues

Module 6: Control Builder and Application Engineering

- ✓ Introduction to Control Builder
- ✓ Control Builder project organization
- ✓ Libraries and applications
- ✓ Creating controller applications
- ✓ Application-to-controller allocation
- ✓ Program organization
- ✓ Control logic engineering
- ✓ Online and offline engineering concepts
- ✓ Compilation and error checking
- ✓ Downloading applications to controllers
- ✓ Online monitoring of applications
- ✓ Engineering changes and application updates

Module 7: Control Modules, Programs, and Function Blocks

- ✓ Program organization concepts

- ✓ Function blocks and functions
- ✓ Control module concepts
- ✓ Creating and configuring control modules
- ✓ Standard control libraries
- ✓ Boolean and arithmetic logic
- ✓ Timers and counters
- ✓ Interlocking concepts
- ✓ Sequence logic fundamentals
- ✓ PID control fundamentals
- ✓ Reusable engineering objects
- ✓ Testing control logic
- ✓ Online monitoring and troubleshooting

Module 8: Variables, Data Types, and Signal Engineering

- ✓ Variable concepts in control applications
- ✓ Local and global variables
- ✓ Basic data types
- ✓ Structured and user-defined data types
- ✓ Variable declaration and initialization
- ✓ I/O variable connections
- ✓ Signal objects and signal handling
- ✓ Parameter configuration
- ✓ Data flow between applications
- ✓ Variable monitoring
- ✓ Troubleshooting signal and variable connections

Module 9: Process Graphics and Operator Workplace Engineering

- ✓ Introduction to operator visualization
- ✓ Operator Workplace concepts
- ✓ Process graphic engineering
- ✓ Graphic display organization
- ✓ Creating process displays
- ✓ Adding process objects and graphical elements
- ✓ Connecting graphics with process values
- ✓ Dynamic properties and animations
- ✓ Status and indication objects
- ✓ Faceplates and interaction concepts
- ✓ Navigation between displays
- ✓ Operator commands and control interactions
- ✓ Testing and validating process graphics
- ✓ Good practices for operator display engineering

Module 10: Alarm and Event Engineering

- ✓ Alarm management concepts
- ✓ Alarm and event architecture
- ✓ Configuring process alarms
- ✓ Alarm priorities and classifications
- ✓ Alarm limits and conditions
- ✓ Alarm acknowledgement concepts
- ✓ Event generation

- ✓ Alarm lists and operator presentation
- ✓ Alarm filtering and navigation
- ✓ Alarm status monitoring
- ✓ Basic alarm troubleshooting
- ✓ Engineering considerations for effective alarm handling

Module 11: Trends, Historical Data, and Process Monitoring

- ✓ Introduction to process trends
- ✓ Real-time trend configuration
- ✓ Historical trend concepts
- ✓ Configuring process variables for trending
- ✓ Trend displays and visualization
- ✓ Time ranges and scaling
- ✓ Monitoring process behavior
- ✓ Historical information concepts
- ✓ Using trends during troubleshooting
- ✓ Process performance analysis fundamentals

Module 12: Communication and System Integration

- ✓ Communication architecture in System 800xA
- ✓ Controller-to-controller communication concepts
- ✓ Communication between control applications
- ✓ OPC integration concepts
- ✓ External system connectivity
- ✓ Data exchange principles

- ✓ Third-party device integration concepts
- ✓ Communication parameter configuration
- ✓ Monitoring communication status
- ✓ Communication diagnostics
- ✓ Troubleshooting connectivity problems
- ✓ Integration considerations for plant automation systems

Module 13: System Administration, Security, Diagnostics, and Maintenance

System Administration

- ✓ System administration fundamentals
- ✓ Users, groups, and roles
- ✓ Workplace access concepts
- ✓ System configuration management
- ✓ Engineering access considerations

Security

- ✓ Industrial automation security fundamentals
- ✓ User authentication and authorization concepts
- ✓ Role-based access
- ✓ Engineering and operator permissions
- ✓ Security considerations for control environments

Diagnostics and Maintenance

- ✓ System status monitoring

- ✓ Controller diagnostics
- ✓ I/O diagnostics
- ✓ Communication diagnostics
- ✓ Application status monitoring
- ✓ Identifying common system faults
- ✓ Diagnostic information and event analysis
- ✓ Preventive maintenance considerations

Module 14: Engineering Workflow, Backup, Troubleshooting, and Practical Project

Engineering Workflow

- ✓ Engineering project planning
- ✓ Configuration workflow
- ✓ Engineering standards and naming conventions
- ✓ Object reuse and standardization
- ✓ Managing engineering modifications
- ✓ Verification and testing practices

Backup and Recovery

- ✓ Backup concepts
- ✓ Engineering project backup
- ✓ Configuration preservation
- ✓ Restore concepts
- ✓ Version and change management considerations

Troubleshooting

- ✓ Systematic troubleshooting methodology
- ✓ Controller and application issues
- ✓ I/O signal troubleshooting
- ✓ Communication troubleshooting
- ✓ Graphic and operator interface issues
- ✓ Alarm configuration issues
- ✓ Using diagnostic information effectively

Practical Project

- ✓ Reviewing automation requirements
- ✓ Creating the project structure
- ✓ Configuring controller and hardware
- ✓ Configuring I/O signals
- ✓ Creating control applications
- ✓ Implementing basic process logic
- ✓ Configuring process graphics
- ✓ Configuring alarms and trends
- ✓ Testing controller-to-HMI interaction
- ✓ Performing diagnostics and troubleshooting
- ✓ Reviewing backup and project maintenance procedures
- ✓ Final project verification