MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

CLXTRAINER CONTROLLOGIX TRAINING (CBT)

""Mastering Allen-Bradley ControlLogix PLC Programming and Troubleshooting Through Simulation-Based Training""

Schedule

Date	Venue	Fees (Face-to-Face)
21 – 25 Sep 2026	Dubai, UAE	USD 3495 per delegate

► **Available delivery methods:** Face-to-Face & Online Training

Introduction

Programmable Logic Controllers (PLCs) play a critical role in modern industrial automation. Allen-Bradley's ControlLogix platform is widely used for high-performance control applications across sectors including oil & gas, manufacturing, water treatment, and utilities. To maximize system uptime and reliability, technicians and engineers must be proficient in ControlLogix programming, diagnostics, and maintenance.

This 5-day hands-on training is delivered using CLXTrainer™—a ControlLogix-based computer-based training (CBT) simulation software that mirrors real-world PLC environments. Participants will gain step-by-step instruction in programming, ladder logic, fault tracing, and communication configuration in a safe, interactive setting.

Objectives

By the end of this course, participants will be able to:

- Understand ControlLogix hardware, architecture, and I/O configuration.
- Create, download, and test ladder logic programs using RSLogix 5000 / Studio 5000.
- Use CLXTrainer software to simulate inputs, outputs, and process conditions.
- Diagnose, troubleshoot, and resolve ControlLogix faults using simulation tools.
- Configure communication between controllers and remote modules.
- Apply safety and logic best practices for industrial control systems.

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Why Attend

- Build foundational and advanced skills in Allen-Bradley ControlLogix systems.
- Use simulation tools to practice programming and troubleshooting safely.
- Reduce downtime and improve system performance in automation environments.
- Enhance confidence and skill before working on live production systems.
- Prepare for higher-level roles in industrial maintenance and control engineering.

Target Audience

This program is designed for:

- PLC technicians and electricians
- Instrumentation and control engineers
- Maintenance professionals working in automated environments
- Engineering students and apprentices seeking PLC competency
- Anyone needing a practical understanding of ControlLogix operations

Individual Benefits

Key competencies that will be developed include:

- PLC architecture and project creation
- Ladder diagram logic and testing
- Fault analysis and diagnostic routines
- Control system simulation and virtual I/O testing
- Use of Allen-Bradley software tools

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Faster fault resolution and less equipment downtime
- Improved safety and control of automated operations
- Reduced need for external PLC programming support
- Enhanced support for system commissioning and upgrades
- Greater in-house control over automation workflows

Instructional Methodology

The course combines technical instruction with simulated PLC programming using CLXTrainer:

- Simulation Labs – ControlLogix CBT with real-time PLC logic
- Technical Briefings – Controller memory structure, I/O configuration
- Exercises – Writing, testing, and editing ladder programs
- Case Studies – Realistic failure modes and error resolution
- Troubleshooting Drills – Simulation of typical system errors
- Instructor Coaching – Step-by-step debugging guidance

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Course Outline

Training Hours: 7:30 AM – 3:30 PM

Daily Format : 3–4 Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: PLC Fundamentals and CLX Environment

- **Module 1: ControlLogix Overview and Hardware (07:30 – 09:30)**
- Rack, CPU, I/O module basics
- Slot addressing and wiring
- Communication and power requirements
- **Module 2: Introduction to RSLogix 5000 / Studio 5000 (09:45 – 11:15)**
- Creating a new project
- Online/offline modes
- Controller tags and aliasing
- **Module 3: Simulation Setup with CLXTrainer (11:30 – 01:00)**
- Launching the CBT environment
- Navigating logic windows and simulation interface
- Loading sample projects
- **Module 4: Workshop – First Ladder Logic Simulation (02:00 – 03:30)**
- Writing and testing a basic start/stop motor circuit

Day 2: Logic Programming and Bit Instructions

- **Module 5: Ladder Logic Programming Basics (07:30 – 09:30)**
- Bit-level instructions (XIC, XIO, OTE)
- Internal relays, latching, and unlatching
- Logical branching and sequencing
- **Module 6: Timers and Counters (09:45 – 11:15)**
- TON, TOF, RTO logic blocks
- CTU and CTD counters
- Applications in sequencing and delay logic
- **Module 7: Program Testing and Monitoring (11:30 – 01:00)**
- Forcing bits and monitoring data
- Online edits and runtime checks
- Cross-referencing and documentation
- **Module 8: Simulation Drill – Time-Based Process (02:00 – 03:30)**
- Simulating a timing-based pump/fan operation

Day 3: Math, Compare, and Data Handling

- **Module 9: Arithmetic and Compare Functions (07:30 – 09:30)**
- ADD, SUB, MUL, DIV blocks
- Greater than, less than, equal logic
- Analog value simulation
- **Module 10: Move, Mask, and File Instructions (09:45 – 11:15)**
- MOV, MVM, CPT instructions
- Using math with control signals
- Tag addressing and user-defined data types
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Module 11: Project Expansion and HMI Integration Basics (11:30 – 01:00)

- Using simulation outputs with control panels
- Discussion of SCADA/HMI basics
- Alarm and notification logic
- **Module 12: Workshop – Mini Control Application Build (02:00 – 03:30)**
- Participants create a custom simulation model

Day 4: Fault Detection and Troubleshooting

- **Module 13: Common ControlLogix Faults and Errors (07:30 – 09:30)**
- Fault codes and troubleshooting workflow
- Program scan sequence and watchdog timers
- Overwriting and logic conflicts
- **Module 14: Troubleshooting Simulated Failures (09:45 – 11:15)**
- Hands-on fault injection via CLXTrainer
- Break-fix troubleshooting routines
- Resetting and reinitializing programs
- **Module 15: Safety Logic and Best Practices (11:30 – 01:00)**
- Interlocks, emergency stops, and permissive logic
- Tag naming, modularity, and documentation
- Version control and backup planning
- **Module 16: Simulation Lab – Fault Diagnosis Scenario (02:00 – 03:30)**
- Teams solve simulated failure scenarios with live feedback

Day 5: Review, Integration & Final Project

- **Module 17: Program Review and Optimization (07:30 – 09:30)**
- Code cleanup and logic review
- Cross-referencing and structuring
- Performance evaluation
- **Module 18: Final Project – Application Simulation (09:45 – 11:15)**
- Team project involving a complex process simulation
- Review of applied instructions and logic design
- **Module 19: Presentation and Peer Feedback (11:30 – 01:00)**
- Participants present final model to instructor
- Q&A, improvement suggestions, and validation
- **Module 20: Certification and Course Wrap-Up (02:00 – 03:30)**
- Summary, closing remarks, and next-step learning recommendations

Certification

Participants who complete the program will receive a **Certificate of Completion in CLXTrainer ControlLogix Training (CBT)**, validating their ability to configure, program, simulate, and troubleshoot Allen-Bradley ControlLogix PLCs using interactive training tools.

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Why Choose MAWA Events

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In-House / Customized Training Interested in running this course for your team? Please contact us:	TEL: **+601116373203**	EMAIL: **info@mawaevents.net**