

## ADVANCED SCADA & SUBSTATION AUTOMATION SYSTEMS

*“Enhancing Power System Reliability Through SCADA and Automation Expertise”*

### Schedule

Date	Venue	Duration	Fees (Face-to-Face)
16 – 20 Aug 2026	Riyadh, KSA	5 Days	USD 3495 per delegate

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

### Introduction

Modern power systems rely heavily on SCADA (Supervisory Control and Data Acquisition) and substation automation for efficient monitoring, control, and operation. This intensive 5-day course provides participants with advanced knowledge and practical skills to design, operate, and troubleshoot SCADA and substation automation systems.

Participants will gain hands-on experience with automation protocols, real-time data acquisition, and control strategies, enhancing their ability to optimize system performance, reliability, and operational efficiency. The course bridges theoretical concepts with real-world applications in the electrical power sector.

### Objectives

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

- Understand advanced SCADA architectures and substation automation principles.
- Configure, operate, and troubleshoot SCADA and automation systems.
- Analyze system data for operational efficiency and fault detection.
- Implement modern communication protocols in substation automation.
- Enhance system reliability, control, and monitoring capabilities.
- Apply best practices for integration and optimization of power systems.

## Why Attend

- Gain advanced skills in SCADA and substation automation systems.
- Learn practical troubleshooting techniques for complex power networks.
- Understand modern communication protocols and control strategies.
- Improve operational efficiency and system reliability.
- Network with industry experts and peers for knowledge exchange.

## Target Audience

This program is designed for:

- Electrical engineers and substation operators
- SCADA engineers and technicians
- Control system specialists
- Maintenance and operation managers in power utilities
- Consultants and project managers involved in power system automation

## Individual Benefits

Key competencies that will be developed include:

- Mastery of SCADA system design and substation automation technologies
- Ability to configure and maintain SCADA communication networks
- Skills to analyze operational data and detect system anomalies
- Knowledge of modern protocols and standards for power automation
- Enhanced troubleshooting and problem-solving abilities

## Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved system reliability and reduced downtime in power operations
- Efficient monitoring and control of substation and network performance
- Optimized operational procedures and resource allocation
- Enhanced integration of automation systems within the utility framework
- Strengthened workforce expertise and technical capacity in SCADA and automation

## Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings - In-depth coverage of SCADA architectures, automation principles, and power system monitoring
- Case Studies - Real-world examples of successful substation automation and SCADA integration
- Workshops - Hands-on exercises for system configuration, troubleshooting, and data analysis
- Peer Exchange - Group discussions on operational challenges, lessons learned, and best practices
- Tools - Templates and software tools for monitoring, control, and system optimization

## MAWA EVENTS

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## Course Outline

### Detailed 5-Day Course Outline

Training Hours: 7:30 AM – 3:30 PM Daily Format: 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

#### Day 1: Introduction to SCADA and Substation Automation

##### Module 1: SCADA Fundamentals (07:30 – 09:30)

- Overview of SCADA systems and components
- Key concepts in supervisory control and data acquisition

##### Module 2: Substation Automation Principles (09:45 – 11:15)

- Automation architecture and system requirements
- Role of protection and control devices

##### Module 3: Communication Protocols (11:30 – 01:00)

- IEC 61850, DNP3, and Modbus protocols
- Networking and data acquisition techniques

##### Module 4: Practical Applications and Tools (02:00 – 03:30)

- Hands-on introduction to SCADA software and automation tools

#### Day 2: SCADA System Design and Configuration

##### Module 1: Architecture and Design (07:30 – 09:30)

- Designing scalable and reliable SCADA systems
- Redundancy and failover strategies

##### Module 2: Data Acquisition and Control (09:45 – 11:15)

- Real-time monitoring and data logging
- Control strategies for substation operations

##### Module 3: Security and Reliability (11:30 – 01:00)

- Cybersecurity measures in SCADA and automation
- Ensuring reliability and compliance with standards

##### Module 4: Workshop: System Configuration (02:00 – 03:30)

- Configuring SCADA and automation devices
- Data simulation and testing exercises

#### Day 3: Substation Automation and Protection

##### Module 1: Intelligent Electronic Devices (07:30 – 09:30)

- Role of IEDs in substation automation
- Communication and integration techniques

##### Module 2: Protection Schemes (09:45 – 11:15)

- Automation for protection coordination
- Fault detection and isolation methods

##### Module 3: Monitoring and Diagnostics (11:30 – 01:00)

- Real-time condition monitoring
- Predictive maintenance strategies

##### Module 4: Workshop: Protection System Simulation (02:00 – 03:30)

- Hands-on exercises with automation and protection software

#### Day 4: Advanced Applications and Integration

## Module 1: Remote Operations and Control (07:30 – 09:30)

- Supervisory control from central control rooms
- Remote device management

## Module 2: Integration with Power Systems (09:45 – 11:15)

- Coordinating SCADA with generation and distribution networks
- Data integration and reporting

## Module 3: Performance Analysis (11:30 – 01:00)

- Analyzing system efficiency and reliability metrics

## Module 4: Case Studies and Lessons Learned (02:00 – 03:30)

- Review of industry best practices and successful automation projects

## Day 5: Practical Implementation and Review

### Module 1: Hands-on Workshop (07:30 – 09:30)

- Advanced SCADA configuration exercises
- Substation automation implementation scenarios

### Module 2: Troubleshooting and Diagnostics (09:45 – 11:15)

- Practical fault identification and resolution
- Troubleshooting strategies for real-world systems

### Module 3: Assessment and Feedback (11:30 – 01:00)

- Review of workshop outputs
- Peer feedback and group discussion

### Module 4: Action Planning and Closing (02:00 – 03:30)

- Preparing implementation plans for workplace application
- Key takeaways and next steps

## Certification

Participants will receive a Certificate of Completion in Advanced SCADA & Substation Automation Systems, validating their expertise in SCADA operation, substation automation, and modern power system management practices.

## Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation's unique goals.

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