

Course No. 1533

Building Management Systems (BMS) Training Course

HVAC, REFRIGERATION & BUILDING SERVICES
INDUSTRIAL ENGINEERING, MAINTENANCE & OPERATIONS

DURATION

5 Days

DELIVERY

Classroom



Course Overview

The Building Management Systems (BMS) Training Course is a comprehensive professional program designed to develop the technical and operational capabilities required to understand, manage, monitor, and optimize modern building management systems. BMS technology plays a central role in the efficient operation of commercial buildings, government facilities, hospitals, hotels, airports, industrial sites, educational institutions, and large-scale infrastructure by integrating critical building services into a centralized monitoring and control environment.

The course provides participants with a structured understanding of BMS architecture, field devices, controllers, communication networks, supervisory interfaces, and automated control strategies. It explores how heating, ventilation and air conditioning, lighting, electrical systems, energy monitoring, fire and life-safety interfaces, security systems, and other building services can be monitored and coordinated through an integrated building automation environment. This integrated approach supports better operational visibility, improved equipment performance, more effective maintenance, and informed facility management decisions.

Particular emphasis is placed on practical BMS operation, control logic, alarms, trends, scheduling, data analysis, and system optimization. Participants will examine how building automation systems collect and process information from sensors and field devices, how controllers execute programmed sequences, and how operators use graphical interfaces and system data to identify abnormal conditions and improve building performance.

The program also addresses BMS commissioning, troubleshooting, maintenance, cybersecurity considerations, system integration, and performance management. By combining engineering principles with practical operational applications, the Building Management Systems Training Course helps organizations strengthen facility reliability, improve energy management, reduce unnecessary operational losses, and establish more effective approaches to building automation and intelligent facility management.

Objectives

- Analyze the fundamental architecture, components, and operating principles of Building Management Systems during the course.
- Evaluate sensors, actuators, controllers, field devices, communication networks, and supervisory

interfaces according to their operational functions.

- Apply building automation principles to HVAC, lighting, electrical, and other integrated building services.
- Develop basic control strategies for temperature, pressure, humidity, scheduling, ventilation, and equipment sequencing.
- Assess BMS alarms, trends, schedules, and operational data to identify abnormal equipment and system conditions.
- Design practical approaches for monitoring energy consumption and identifying opportunities for operational efficiency.
- Implement structured procedures for BMS commissioning, functional testing, and operational verification.
- Diagnose common BMS communication, control, sensor, actuator, and software-related problems using systematic troubleshooting methods.
- Evaluate system integration requirements between BMS and other building services and automation platforms.
- Improve preventive maintenance practices by using BMS information, alarms, trends, and equipment operating data.
- Strengthen operational decision-making through effective interpretation of BMS dashboards, reports, and performance indicators.
- Develop an actionable framework for improving BMS reliability, energy performance, maintenance effectiveness, and facility operations.

Who Should Attend

The course is designed for professionals responsible for the engineering, operation, maintenance, automation, and management of building systems. It is particularly suitable for mechanical engineers, electrical engineers, facilities engineers, building automation engineers, controls engineers, HVAC engineers, maintenance engineers, energy engineers, facility management professionals, BMS operators, building automation technicians, and maintenance supervisors.

It is also valuable for facilities managers, engineering managers, maintenance managers, property and asset managers, project managers, consultants, contractors, commissioning professionals, and technical procurement specialists involved in building automation projects. Professionals responsible for commercial buildings, government facilities, hospitals, hotels, airports, educational institutions, industrial facilities, data centers, and large infrastructure environments will benefit from the course.

The program is also appropriate for executives, department heads, and decision makers who need to understand how Building Management Systems contribute to energy management, operational efficiency, asset performance, maintenance planning, sustainability initiatives, and intelligent facility management. It provides sufficient technical depth for specialists while maintaining a practical management perspective for senior professionals.

Learning Outcomes

- Explain the architecture and operating principles of modern Building Management Systems.
- Identify the functions and applications of sensors, actuators, controllers, gateways, and supervisory software.
- Interpret BMS architecture diagrams, control sequences, network structures, and graphical interfaces.
- Monitor HVAC and other building services through centralized BMS platforms.
- Develop and evaluate basic control sequences for building equipment and systems.
- Configure and assess schedules, setpoints, alarms, trends, and operational parameters.
- Analyze historical BMS data to identify performance deviations and operational inefficiencies.
- Diagnose common sensor, controller, communication, software, and field-device problems.
- Apply structured procedures for BMS commissioning, functional testing, and system verification.
- Evaluate opportunities for improving energy efficiency through automation, scheduling, and optimized control.
- Assess integration requirements between BMS and HVAC, lighting, electrical, metering, security, and other building systems.
- Develop practical recommendations for improving BMS operation, maintenance, reliability, and performance.

Course Outline

DAY 01

Building Management Systems Fundamentals and Architecture

- Introduction to Building Management Systems and building automation
- Role of BMS in modern facility management and intelligent buildings
- Fundamental BMS architecture and system hierarchy
- Field devices, sensors, actuators, controllers, and input/output modules
- Supervisory workstations, operator interfaces, and graphical monitoring
- Direct digital control principles and automated building control
- HVAC, lighting, electrical, and equipment monitoring through BMS
- Communication networks and data exchange within building automation systems
- Overview of common building automation communication technologies
- System documentation, points lists, control diagrams, and functional descriptions

PRACTICAL APPLICATION

Analyze a representative BMS architecture and identify the function of each major component

DAY 02

HVAC Control, Automation Strategies, and Building Services Integration

- Fundamentals of HVAC control through BMS
- Temperature, humidity, pressure, airflow, and occupancy monitoring
- Control of air handling units and ventilation systems
- Chilled water systems, pumps, valves, and cooling plant monitoring
- Variable air volume systems and airflow control
- Fan coil units and terminal equipment control
- Equipment start and stop sequences and interlocking strategies
- Setpoints, schedules, occupancy modes, and operating parameters
- Lead-lag control and equipment sequencing

DAY 02 — CONTINUED

- Integration of lighting and electrical systems into building automation
- Monitoring of power consumption, demand, and electrical parameters

PRACTICAL APPLICATION

Develop a basic control sequence for an HVAC system and evaluate its operating logic

DAY 03

BMS Operation, Alarms, Trends, Data Analysis, and Energy Management

- BMS operator workstations and graphical user interfaces
- Navigation of system graphics and equipment status screens
- Alarm management principles and alarm prioritization
- Alarm acknowledgement, investigation, and escalation
- Trend configuration and historical data collection
- Analysis of temperature, pressure, flow, energy, and equipment operating trends
- Identification of abnormal operating patterns through BMS data
- Scheduling and optimization of equipment operating hours
- Energy monitoring and building performance analysis
- Identification of energy waste caused by inappropriate setpoints, schedules, and control sequences
- Development and use of operational performance indicators

PRACTICAL APPLICATION

Analyze a simulated BMS trend and alarm history to identify operational problems and energy-saving opportunities

DAY 04

BMS Commissioning, Maintenance, Troubleshooting, and System Integration

- BMS project commissioning principles and responsibilities
- Review of control sequences and points lists before commissioning
- Functional performance testing of sensors, actuators, controllers, and equipment
- Verification of control commands and feedback signals
- Calibration and validation of sensors and field devices
- Testing communication between controllers, gateways, and supervisory systems
- Common BMS communication failures and network-related problems
- Troubleshooting faulty sensors, actuators, controllers, and input/output signals
- Diagnosis of incorrect control sequences and unexpected equipment operation
- Preventive maintenance requirements for BMS hardware and software
- Backup, documentation, configuration management, and system reliability
- Integration of BMS with other building systems and operational platforms

PRACTICAL APPLICATION

Work through BMS fault scenarios and develop systematic troubleshooting and corrective-action procedures

DAY 05

Advanced BMS Optimization, Energy Performance, Cybersecurity, and Continuous Improvement

- Advanced strategies for BMS performance optimization
- Demand-based control and intelligent equipment scheduling
- Optimization of HVAC operating parameters
- Energy performance monitoring and operational benchmarking
- Using BMS data to support predictive and condition-based maintenance
- Building performance diagnostics and fault detection concepts
- Integration of BMS with energy management and facility management practices

DAY 05 — CONTINUED

- Data quality, system documentation, user access, and operational governance
- Fundamental cybersecurity considerations for connected building automation systems
- Access management, network segmentation, secure configurations, and operational awareness
- Development of BMS performance improvement plans
- Establishing maintenance, monitoring, and continuous improvement strategies

FINAL WORKSHOP

Develop an integrated BMS optimization and improvement action plan for a representative facility

Register or Request More Information

Course page: <https://quest-training.com/courses/building-management-systems-bms-training-course>

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