



Content
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Building Automation Training

Contact us Today for a FREE quotation to deliver this course at your company's location.

<https://www.electricityforum.com/onsite-training-rfq>

Our Building Automation Training course is designed to assist organizations to identify opportunities for retrofitting existing building control systems and power and communication networks or to design BAS systems into new building designs.

Building automation is the automatic centralized control of a building's HVAC, lighting and communications systems (such as fire alarm and life safety systems and building security systems, through a Building Management System (BMS) or Building Automation System (BAS). The objectives of building automation are improved comfort, energy management, efficient operation of building systems, and a reduction in water consumption and waste water. A robust BAS design can include the integration with renewable energy and energy storage systems.

Almost all multi-story, green buildings are designed to accommodate a BAS for the energy, air and water conservation characteristics. Electrical equipment demand response is a typical function of a BAS, as well as more sophisticated HVAC monitoring required from "tight", insulated buildings.

This real-world-based Building Automation Training course will give you a broad introduction to the specific issues involved with Building Automation Systems (BAS). Students will explore the processes that occur at every level in the air conditioning industry, including digital controls.

Learn about sensing and measurement, actuation, analog output devices, and relays.

Computer interfaces are discussed including web interfaces. Your survey of the world of BAS includes: Future of BAS, Digital Direct Control (DDC) Basics, Field Devices, the Human Machine Interface (HMI), BAS Design and Specification, Energy Conservation Control Strategies, and System Maintenance.

This Building Automation Training course will enable you to identify and describe the major components in a BAS along with the basic mechanical components and controls in an HVAC control system.

You will be able to describe and explain the basic functions of DDC systems and HMI basics, reference codes and standards applicable to BAS, and justify control components for project work.

This Building Automation Training course will help you explain BAS in non-ATC systems (lighting, fire, security, etc.), the process of implementing BAS, and Energy Conservation Control Strategies. You will also learn where to look for additional resources.

THIS BUILDING AUTOMATION TRAINING COURSE WILL TEACH YOU HOW TO:

- Identify and describe the major components in a BAS
- Identify and describe the basic mechanical components and controls in an HVAC control system
- Describe and explain the basic functions of DDC systems
- Reference codes and standards applicable to BAS
- Describe and explain HMI basics
- Explain BAS in non-ATC systems (lighting, fire, security, etc.)

- Explain the process of implementing BAS
- Explain Energy Conservation Strategies
- Justify control components for project work
- Identify where to look for additional references
- Describe the major components in a BAS

Building Automation Training Overview:

- What is Building Automation
- Delivery of BAS

BAS Applications:

- Building HVAC Basics
- Space Condition Controls
- Air Handler Controls
- Central Utilities
- Non-ATC Systems
- Energy Conservation Control Strategies

BAS System Solutions:

- DDC Basics | Field Devices

BAS System Delivery:

- Design and Specification
- Project Engineering
- Application Development
- Implementation

- Maintenance

The Human Machine Interface (HMI) Applications:

- ASHRAE Defined
- Basic HMI
- Small Facility HMI
- Large Facility HMI

WHO SHOULD ATTEND

- Industrial, Commercial, Institutional Electrical Engineers
- Consulting Electrical Engineers
- Building Electricians
- Instrumentation Mechanics
- Building Technicians
- Building and Property Managers & Energy Management Professionals

STUDENTS RECEIVE

- 100-Page Electrical Maintenance Handbook - Value \$20 (details below)
- 1.4 Continuing Education Unit (CEU) Credits
- A **FREE** Magazine Subscription (Value \$50)
- **\$100** Coupon toward any future Electricity Forum event (restrictions apply)
- Course Materials in Paper Format

COURSE OUTLINE

Building Automation Training

Instructor:

Dr. Eduard Loiczli, P.Eng - Building Automation Systems Specialist, The Electricity Forum

DAY ONE

TYPES OF BUILDING AUTOMATION AND CONTROL SYSTEMS

- Building Automation and Systems (BAS)
- Building Control System (BCS)
- Building Management System (BMS)
- Direct Digital Control (DDC)
- Energy Management and Control Systems (EMCS)

APPLICABLE BAS AND BMS STANDARDS

OVERVIEW OF A BAS/BMS SYSTEM

TODAY'S BAS TRENDS

GREEN ENERGY SAVING BUILDINGS

- American Green Building Certification-GBCI
- LEED Accreditation

BENEFITS OF BUILDING AUTOMATION SYSTEMS

- Energy Savings
- Environmental Impact
- Improved Security
- DVR and CCTV Systems interaction
- Interaction with Life Safety Systems and Fire Protection
- Building Maintenance using BAS / BMS
- Operator Convenience
- Power monitoring
- Security
- Close circuit video (CCTV)
- Card and keypad access
- Elevator/escalator control
- Plumbing and water/waste water management

BLOCK DIAGRAM OF A BAS/BMS

- BAS System Delivery
- Design and Specification
- Project Engineering
- Application Development of custom made application
- Implementation of a specific application
- Maintaining a BAS System

BAS INTEGRATION

- Space Condition Controls
- Air Handler Controls
- Air Handling Units (AHUs)
- Roof-top Units (RTUs)
- Fan Coil Units (FCUs)

- Heat Pump Units (HPUs)
- Variable Air Volume boxes (VAVs)

BAS STRATEGIES FOR ENERGY CONSUMPTION

- Chillers Control
- Boilers Control and Backup
- Lighting control
- Typical Process Close Loop Control
- Lighting control
- Central Utilities
- Energy Conservation
- Water Conservation
- Water leak Detection

DAY TWO

BAS SYSTEM SOLUTIONS

- DDC Basics-Direct Digital Control
- Field Devices and regulation
- Local Control and Field devices
- The Human Machine Interface (HMI) Applications:
 - ASHRAE Defined
 - Basic HMI
 - Small Facility HMI
 - Large Facility HMI
- Wired and Wireless Communication
- Modbus
- Profibus
- Control Net

- Device Net
- Industrial Ethernet
- LAN Builder
- Open Architecture Networks

BAS SYSTEM INTERACTION

- DVR and CCTV Systems interaction
- Interaction with Life Safety Systems and Fire Protection

BUILDING MAINTENANCE USING BAS/BMS

BAS CASE STUDIES:

- Typical Installation of a BAS, requirements for practical implementation
- Retrofitting an old BAS, from Analog to Digital Implementation
- Demonstration of a Building Automation Implementation based on Rockwell Technology
- Typical BAS for an Industrial Facility

Questions and Answers

COURSE TIMETABLE

Both days:

Start: 8:00 a.m.

Coffee Break: 10:00 a.m.

Lunch: 12:00 noon

Restart: 1:15 p.m.

Finish: 4:30 p.m.

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