

BEYOND

SMART CITIES

BUILDING AUTOMATION & CONTROL SYSTEM

CEM REFRESHER TRAINING

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ENERGY MANAGEMENT SPECIALIST CURRICULUM

CERTIFIED BUILDING AUTOMATION SPECIALIST

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SMART CITIES

ENVIRONMENTAL BENEFITS OF BUILDING

AUTOMATION SYSTEMS

FOR ENERGY PROFESSIONALS

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WHAT SHOULD YOU LEARN

Introduction

What Are Benefits Of a BAS

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## INTRODUCTION



Building automation is a system of controls that commands the operation of necessary building functions. Automation can affect several aspects of a building's daily operations, but most commonly controls HVAC and electrical systems. Building automation runs via a BAS, or Building Automation System, that manages all of a building's connected automations.

Automation, especially when coupled with artificial intelligence, is a growing trend paving the way for a smarter and more efficient construction industry as a whole. BAS technology is already common, but now it's seeping into new phases of construction as well. Many green buildings utilize a BAS to limit energy consumption and increase operating convenience for occupants.



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## BENEFITS



With automated building operations, facilities management costs decrease as systems regulate the operation of building features like HVAC and lighting. Automation also decreases total energy consumption, creating an environmental win that can help a building become green-certified. Some buildings can save up to 30% on energy costs by implementing automation.

BAS functions to limit energy usage as a whole and can result in a slew of environmental benefits that keep building occupants healthier and happier. Some positive outcomes of automation include lower energy usage and tapered waste that lead to cost savings. A building's individual stress on the electrical grid also plays a factor, with automation severely reducing that strain.

A Building Automation System (BAS) can provide many benefits for you, such as higher energy efficiency, lower operating and maintenance costs, better indoor air quality, and greater occupant comfort and productivity. Here are some examples of how that can work.



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## HIGHER ENERGY EFFICIENCY



✓ Controllers optimize HVAC efficiency (by methods such as resetting setpoints of boilers according to outside temperature, optimizing start/stop times for occupied periods, using economizers for free cooling, and maintaining ventilation at the most efficient flow rates).

✓ Motion sensors allow automatic setback override during unoccupied periods as well as adaptive occupancy scheduling.

✓ Lighting controls reduce unnecessary artificial lighting via motion sensors and schedules as well as by controlling daylight harvesting louvers.

✓ Controllers save water and energy by controlling rainwater harvesting and landscape irrigation.



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### LOWER OPERATING AND MAINTENANCE COSTS

- ✓ Trends and logs provide information for further optimization of the system as well as for documentation requirements for building certification.
- ✓ Individual room control allows setpoint adjustments only where needed.
- ✓ Based on sensor data, software alarms and notifications alert service personnel to issues before they cause discomfort to building occupants and escalate into bigger, more costly problems.
- ✓ Remote network monitor, control, and troubleshooting via the Internet or modem reduces service calls.
- ✓ Sensors with data ports also allow quick network access and control to service personnel using a laptop computer and a network interface.



### BETTER INDOOR AIR QUALITY

- ✓ Temperature and humidity sensors monitor thermal comfort.
- ✓ Carbon dioxide (CO<sub>2</sub>) and carbon monoxide (CO) sensors monitor pollutants, ensuring the required minimum fresh air ventilation.
- ✓ Controllers, based on sensor input, provide optimal zone ventilating, heating and air conditioning.
- ✓ Controllers provide smoke control during a fire, maintaining breathable air zones for evacuation.
- ✓ Controllers monitor and control natural ventilation dampers.



### GREATER OCCUPANT COMFORT AND PRODUCTIVITY

- ✓ Sensors in each room sense temperature and allow occupant-controlled setpoints and overrides.
- ✓ Humidity sensors are used to control summer dehumidification and winter humidification of air.
- ✓ Controllers, based on sensor input, provide optimal zone ventilating, heating and air conditioning.
- ✓ Controllers provide smoke control during a fire, maintaining breathable air zones for evacuation.
- ✓ Controllers monitor and control natural ventilation dampers.





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