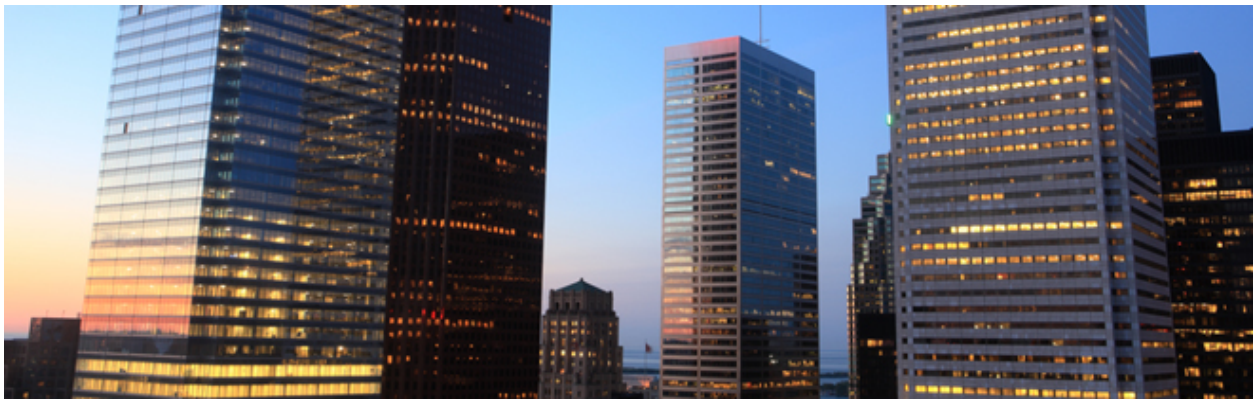




saveONenergy^{ON}



Efficiency from Controls



Module 5 – Efficiency from Controls

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Module 5

Efficiency from Controls

Control principles, efficiency from simple controls, building automation systems, and process optimization

Optimization of energy efficiency in facilities means:

- Only use energy when it is really required.
- Only use the amount of energy actually required.
- Apply the energy that is used with the highest possible efficiency.

The achievement of these objectives is facilitated by building and process control systems.

This module focuses on the use of controls for improving facility energy performance from the point of view of energy managers, and is not intended to develop the in-depth technical knowledge required by controls professionals, or the operational skills required by building operators.

Module 5 Objectives



1. Describe basic control systems ranging from manual control to computerized systems
2. Explain basic control logic
3. Describe typical control system components
4. Describe the configuration of building automation and energy management and control systems
5. List and explain techniques for facility performance optimization by using of BAS and EMCS systems
6. Obtain energy performance information from the BAS and EMCS system
7. Explain the essential principles of intelligent buildings
8. Identify process optimization opportunities from process control in industrial applications



BASIC BUILDING CONTROL PRINCIPLES

Why Use Building Controls?



Manage the operation of . . .	In order to . . .
<ul style="list-style-type: none">• Heating• Cooling and air conditioning• Ventilation• Domestic hot water• Lighting• Windows and shades• Etc.	<ul style="list-style-type: none">• Minimize operating costs• Minimize energy consumption• Improve indoor environmental quality• Prevent un-needed operation of equipment• Minimize maintenance, repair and replacement costs

Modern control systems are able to optimize facility operations, comfort and safety while improving overall energy performance. Among the services that lend themselves to controls are

- Space heating
- Cooling and air conditioning
- Ventilation
- Domestic hot water
- Interior and exterior lighting
- Optimization of daylighting through the operation of windows and shades
- And other systems.

Building controls have a range of benefits, including:

- Minimize operating costs
- Minimize energy consumption and related pollution/GHG emissions
- Improve indoor environmental quality (IEQ)
- Prevent the un-needed operation of equipment
- Minimize maintenance, repair and replacement costs.