



Does your Energy Management System work  
as hard as you do?





- 15 Slides in 15 minutes (sort of)
  - State of the EMS
  - What is it doing
  - What is it not doing
  - What's next
  - Questions
    - Anytime



Advanced  
Energy  
Solutions



FMC Technologies, Inc.

TLA's and FLA's

EMCS

BAS

BCS

EMS

FMCS

ATCS

EIS

ABCS

DDC

FMS



Where EMS Fits in

## Advanced Building Control Systems

(aka Building Automation Systems, Intelligent Buildings, Smart Buildings, etc.)

Systems  
Integration

AFD &  
Monitoring

Continuous  
Cx

## Centralized Building Control Systems

EMS

Lighting  
Control  
Systems

DDC  
Systems

## Building Controls

Local HVAC  
Controls

Occupancy  
Sensors

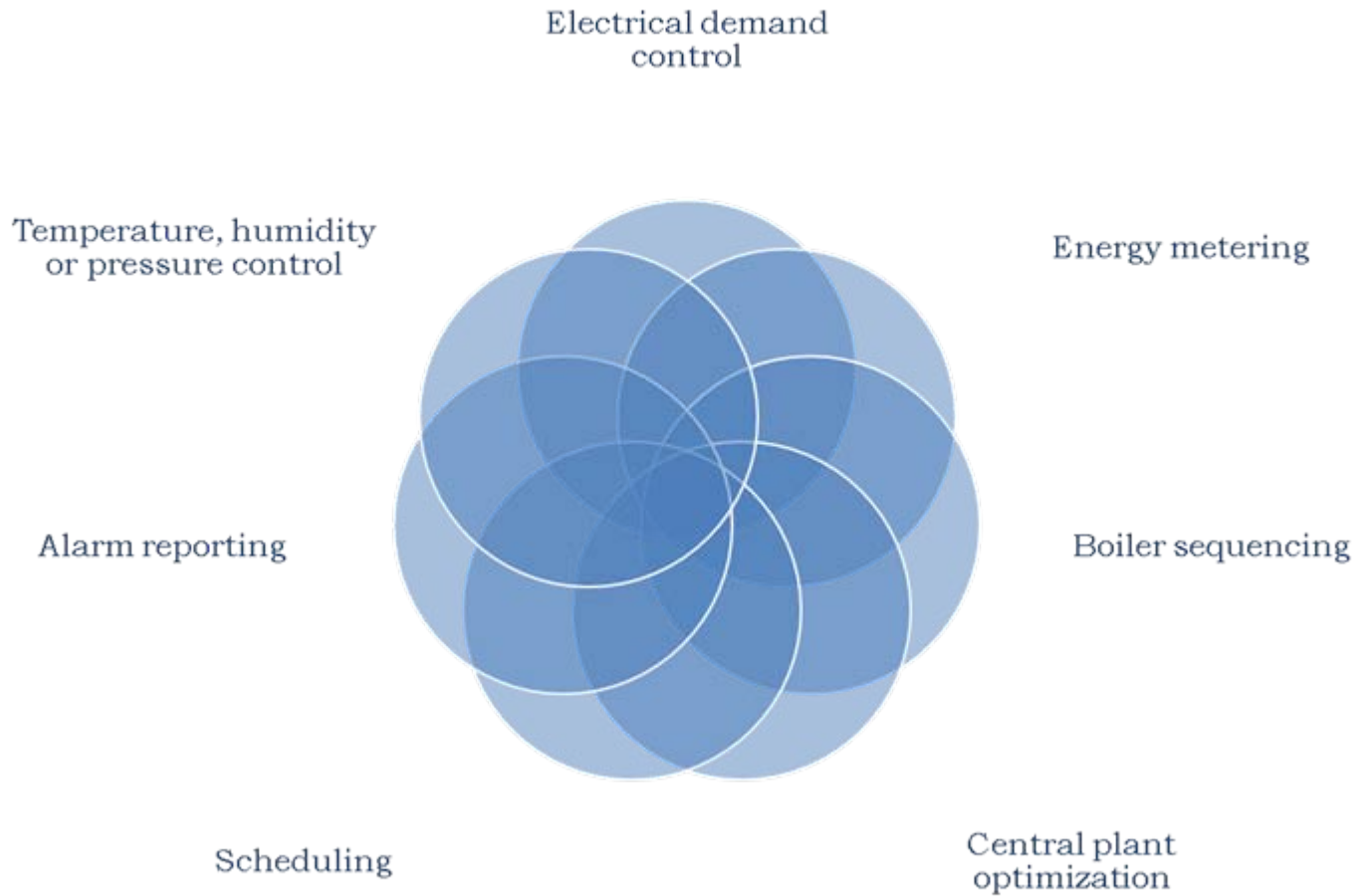
Variable  
Speed  
Drives



- **Late 60's:** Few large-scale centralized systems
- **Mid 70's;** Rapid development (oil embargo)
- **Late 70's - Early 80's;** Direct Digital Controls - mostly the "Big 3"
- **Late 80's - Early 90's;** DDC by New Companies - lower cost computing HP
- **Late 90's;** Start of the Interoperability revolution
- **2000's;** Open protocols, web-based systems
- **2010's;** M&A activity, wireless sensors
- **2020's;** Wireless systems, POE



## Typical EMS Features





## What can be improved?

Industry Issues

Lack of EMS

Underutilization  
of EMS

Late Adoption  
of Advanced  
Building  
Controls



Lack of EMS

Problem:

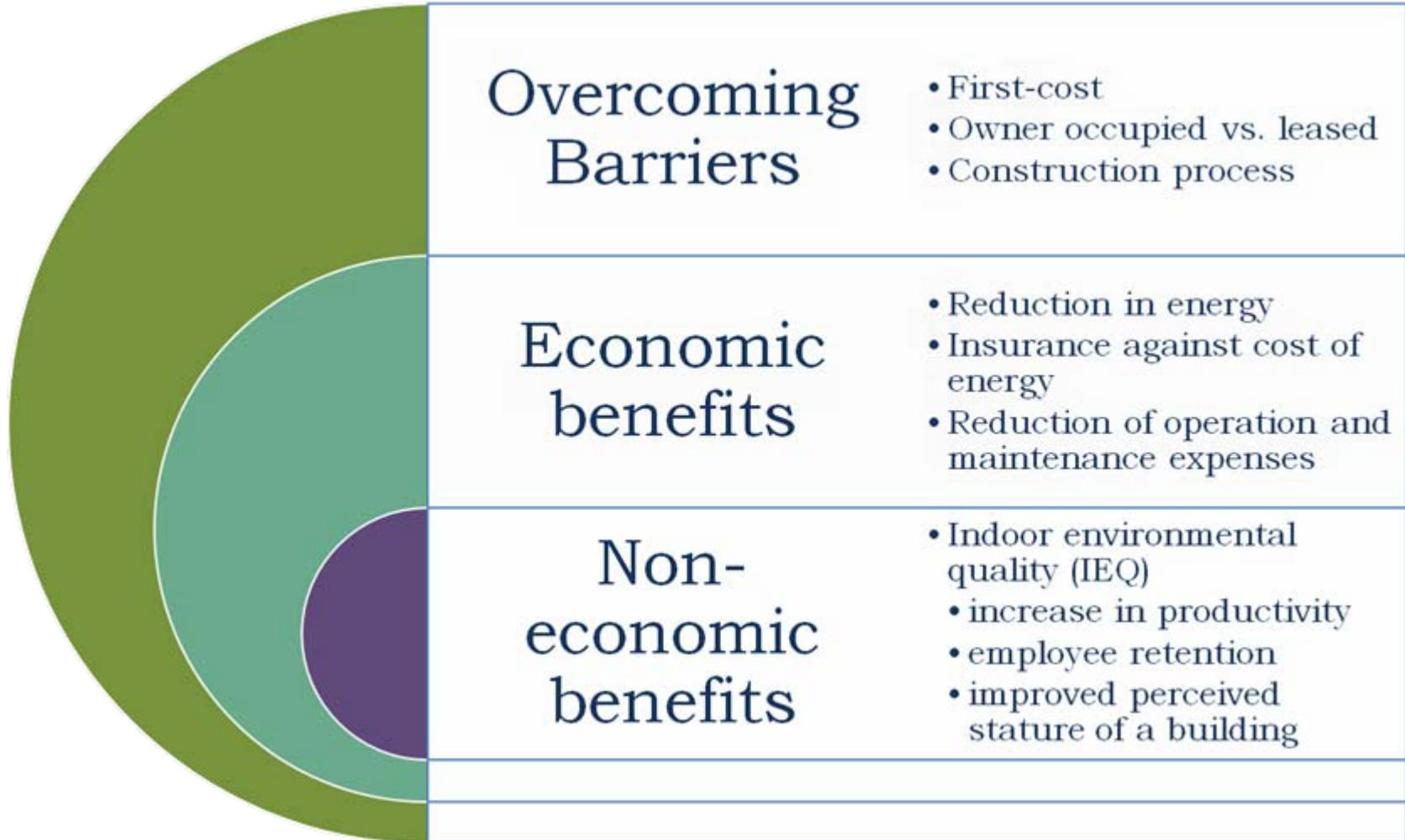
- 10% of all buildings have an EMS
- 33% of total floor space

Industry  
response:

- Utility and tax incentives
- Scalable systems
- Web-based (no front end needed)
- Wireless systems - on the way



## Why Not?





# Underutilization of EMS

Problem:

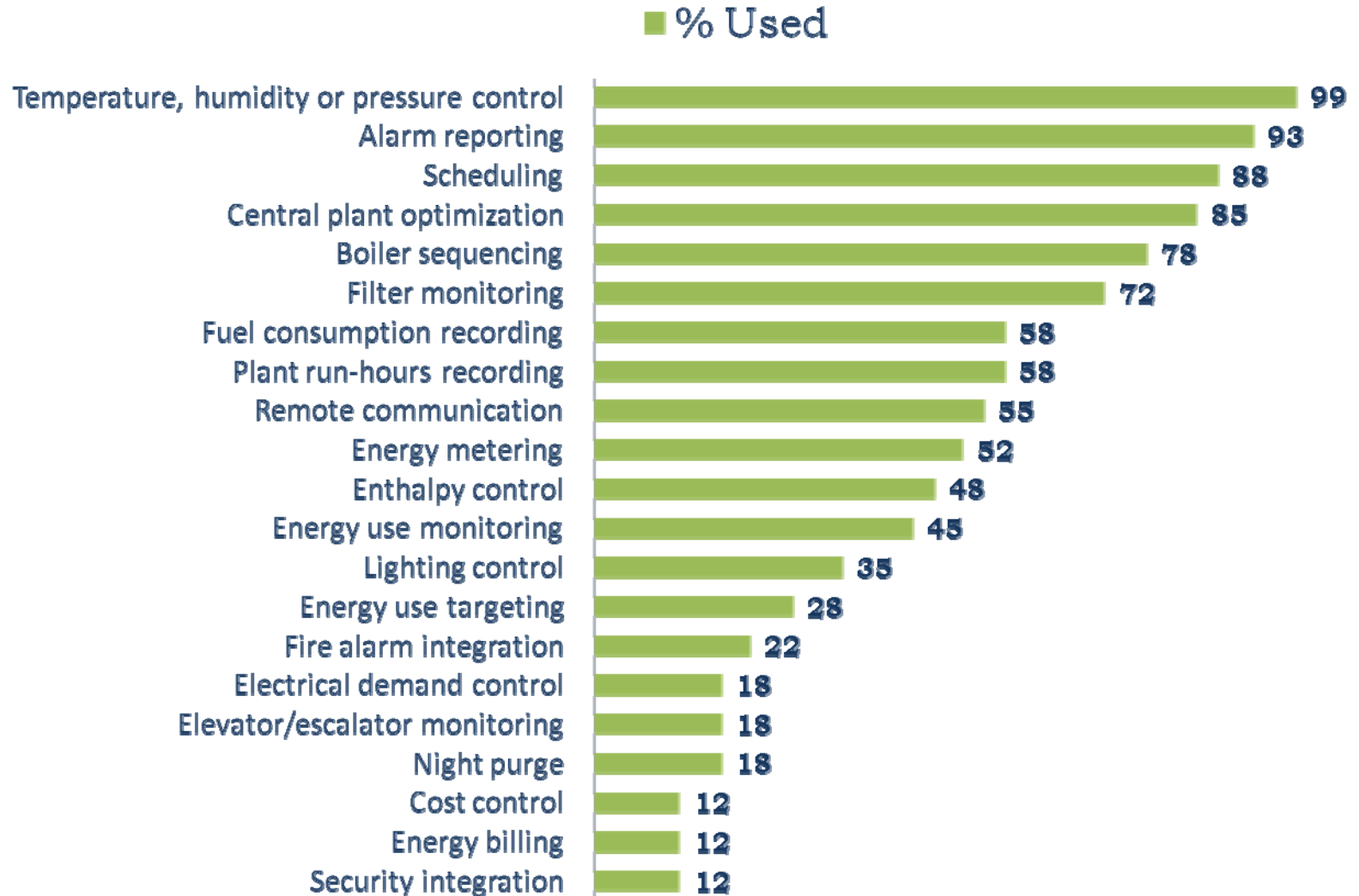
- All functions typically included in an EMS are not implemented.

Industry response:

- Utility incentives available for additional control points.
- Retro-commissioning.



## EMS Functions/Usage





## Late Adoption of Advanced Building Controls

### Problem:

- Advanced functions such as system integration, smart buildings, etc. have not been widely implemented.

### Industry response:

- Standard non-proprietary protocols.
- Structured cabling.
- Specification changes.
- Leed programs.



Convergence???





EMS M&A Activity



JCI acquires Gridlogix (York)



Honeywell acquires Tridium  
(Alerton, Novar and Trend)



Schneider Electric acquires  
TAC, Andover Controls, Invensys, Pelco  
and APC



Carrier acquires Automated Logic



EMS M&A Activity



Cisco acquires Richards Zeta, develops Energywise



IBM moves into Smart Cities and Smart Buildings; teams with JCI



Google – introduces PowerMeter



Microsoft – introduces Hohm



## Barriers to Energy Savings

### Hardware

- Sensors, transducers
- Controllers
- Valves, actuators
- Routers, gateways

### Software

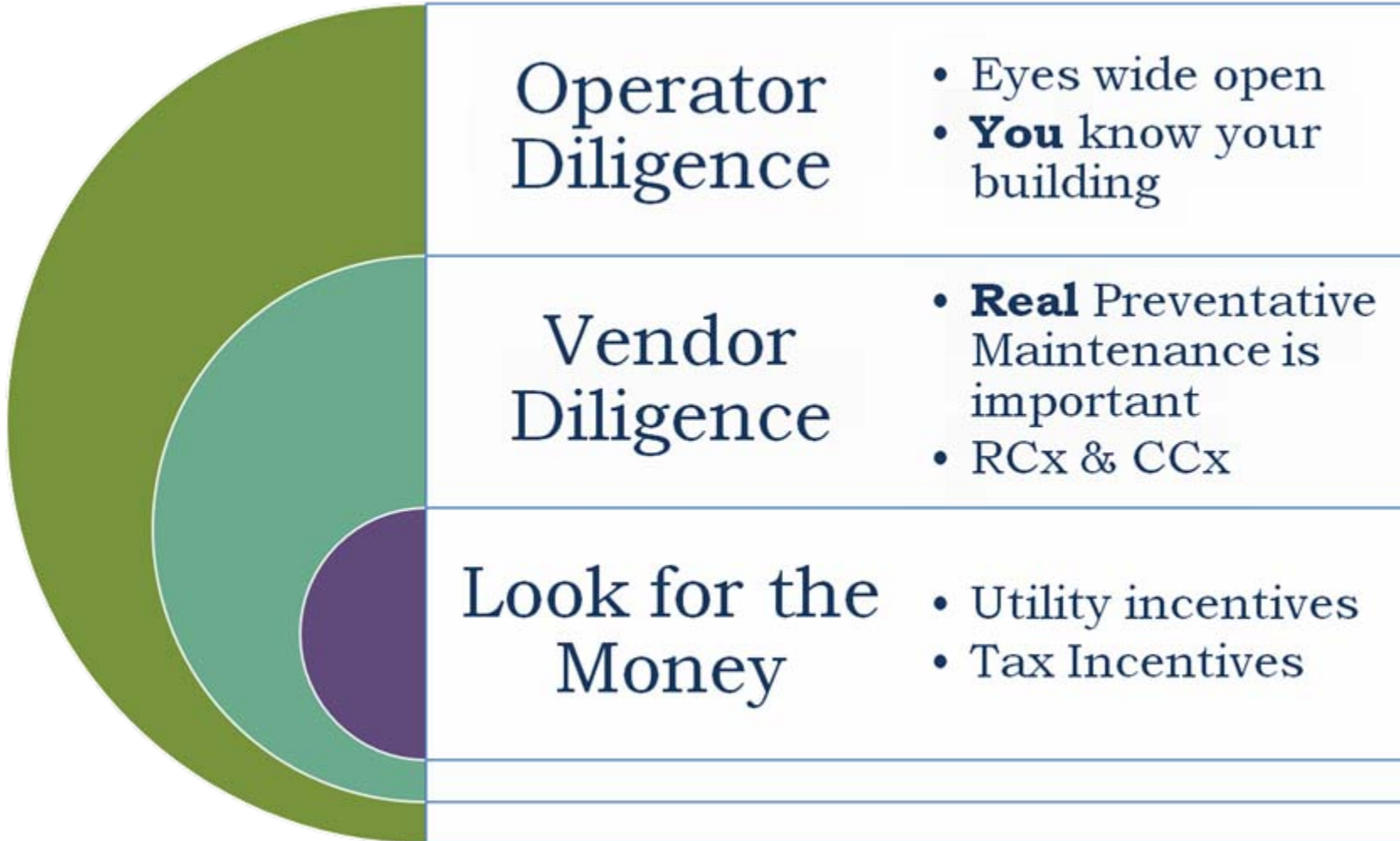
- Point Addressing
- Control logic
- Set points/Schedules
- Data monitoring, display

### Human

- Unintentional modifications
- Lack of operator understanding
- Operator apathy
- Maintenance



## What Can You Do?





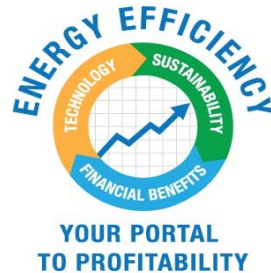
Summary

- If you don't have an EMS
  - It's a good time to look into one
- If you do have an EMS
  - Make sure you are getting the most out of it
  - RCx is a good way to start
- Either Way ...
  - Partner with Utility Companies
  - Benchmark
  - Make Energy Savings a Priority

Advanced  
Energy  
Solutions



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Booth #23

*FMC Technologies provides advanced building control systems that reduce building operating expenses, increase productivity and provide a safe, comfortable working environment.*

Thank You!



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