FacilityConneX
The Voice of Your Equipment

Powered By

Optimizing Critical Zones with MBCx

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Why are Critical Zones, Business Critical

Environmental Health & Safety

+

Product Waste & Research Quality

+

Equipment Downtime & Reliability

+

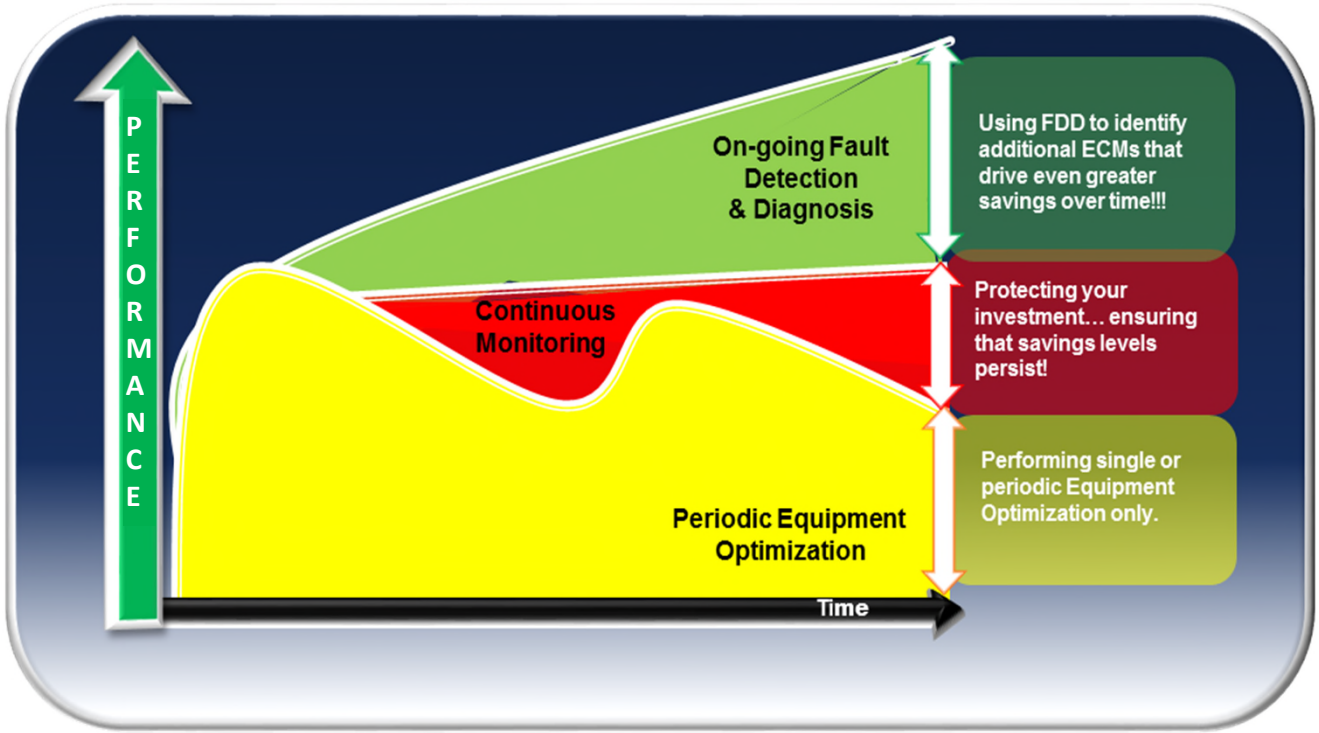
Financial Impact

Learning Objectives

- What is Monitoring-Based Commissioning (MBCx)?
- Monitoring the performance, safety, process quality and reliability, research, and energy impacts of critical zones (including laboratories, clean rooms, operating rooms) controls, particularly failed or “out of spec” controls.
- Understand how such failures, deviations, and anomalies can be detected, identified, quantified, and strategies for correcting them with MBCx
- Live Demonstration of MBCx software in critical zone controls re-commissioning.

MBCx: Using Visibility and Advance Analytics to…

Improve EH&S, Equipment Reliability and Energy Efficiency



Analytics and IoT…

Fault Detection and Diagnostics in a Nutshell

- Even the most well-designed, well-commissioned, and well-maintained buildings can operate less efficient and less safe after only a few years after start-up.
- Typically, only fume hoods are tested on a semi-regular basis in Laboratories
- General zone-level ventilation rates, airflow offsets, etc. are ignored and go out of specification without anyone knowing

What Makes an MBCx System …

Maintenance, Safety, Quality, Energy

- Secure and Protocol Agnostic
- Continuous Monitoring and Detection
- Operation and Maintenance with Mobility
- Integrated Notification
- Fault Detections and Diagnostics
- Optimization, Savings, and Energy Analysis
- Monthly Consultation / Project Prioritization

Who Benefits with Monitoring-Based Commissioning?

Case Study: UMass Amherst
Integrated Sciences Building

Recent project at the University of Massachusetts Amherst including study and implementation of lab optimization measures using MBCx software as a Commissioning and Verification tool

Integrated Sciences Building (ISB) – 8 years old

- 150,000 ft^2 (85,000 ft^2 of Lab Space)
- Verified Annual Savings:
  - Electricity: 1,851,862 kWh
  - Steam: 10,738 Mlb
  - Total Cost Savings: $399,946
- Total Implementation Cost: $590,968
- Simple Payback Period before Incentive: 1.5 years

Case Study: Southcoast Health

Recent project at Southcoast Health includes Operating Room Environmental Monitoring across all Hospital sites for better and more Proactive Infectious Disease Control

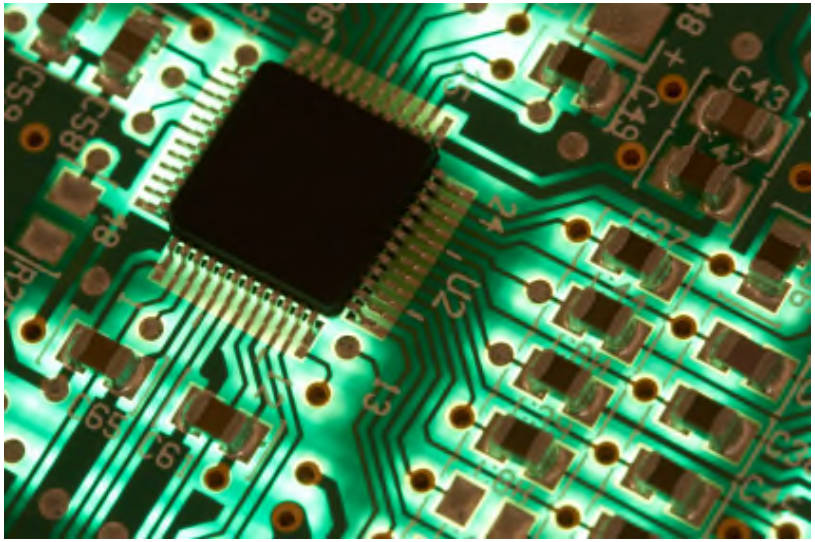
Infectious Disease

- At any time, over 1.4 million people suffer from infectious complications acquired in the hospital
- Hospital Acquired infections are one of the leading causes of death and the economic costs to the healthcare facility are considerable
- A high frequency of Hospital Acquired infections is evidence of **poor quality** of health service delivery and leads to **avoidable costs**.

Case Study: Manufacturing

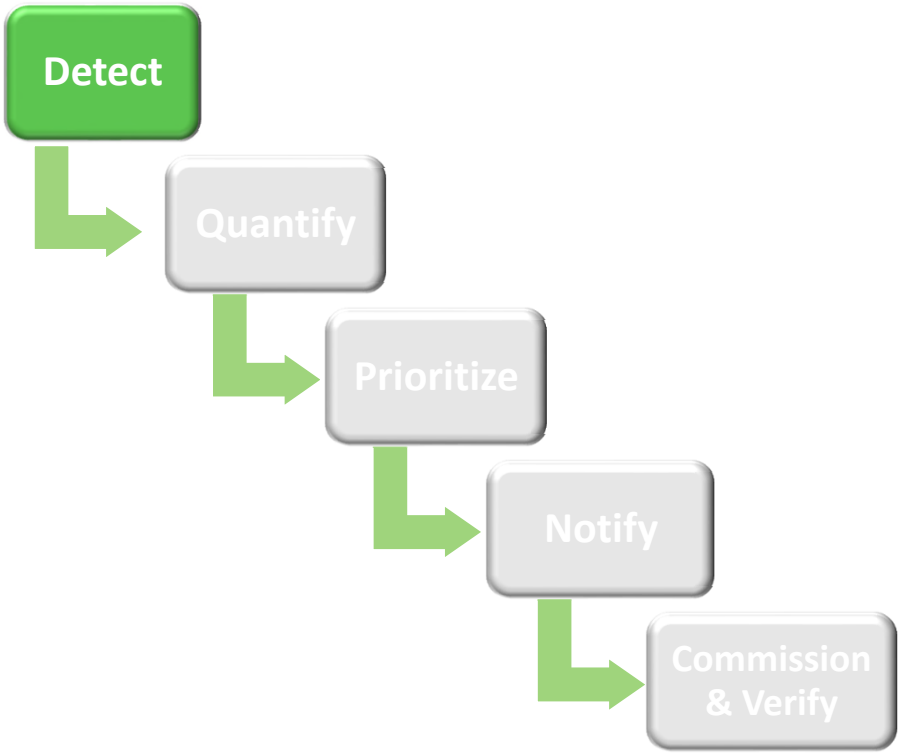
Maintain production volume, revenue and compliance regulations for environmental, health and safety.

- Product loss associated with improper airflow requirements.
- Semiconductor manufacturing causes toxic fumes that must be exhausted from the work space.
- Using Monitoring-Based Commissioning to monitor air flow and air quality



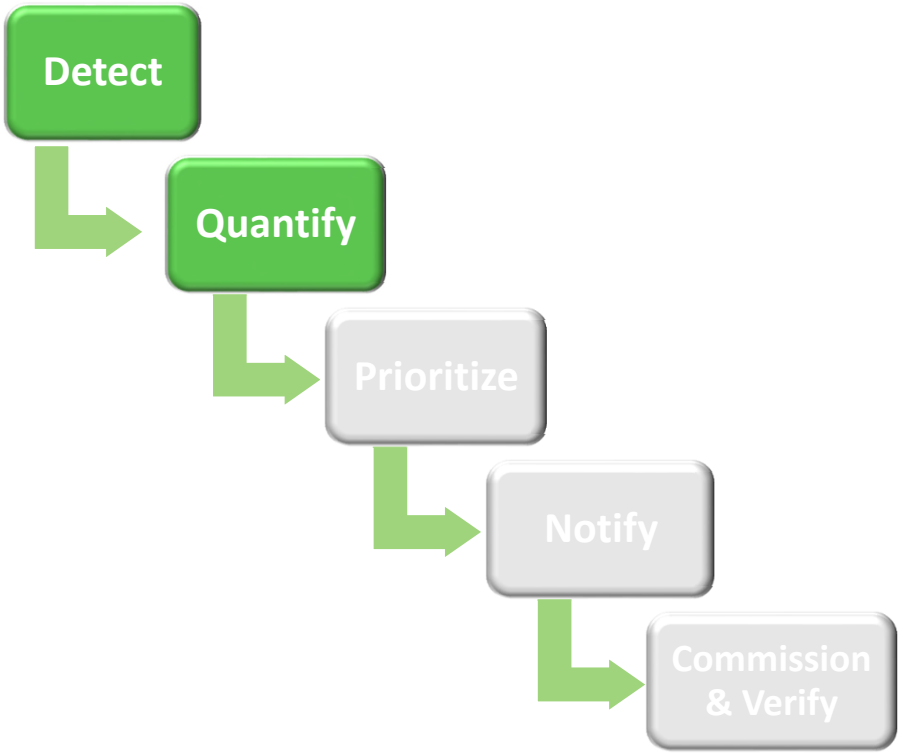
Adding Value with Monitoring-Based Commissioning

- **Connect and Detect -** A wide variety of equipment & controls failures, safety and quality issues



Adding Value with Monitoring-Based Commissioning

- ✓ **Connect and Detect -** A wide variety of equipment & controls failures, safety and quality concerns
- ❑ **Quantify -** The potential energy and cost savings



Adding Value with Monitoring-Based Commissioning

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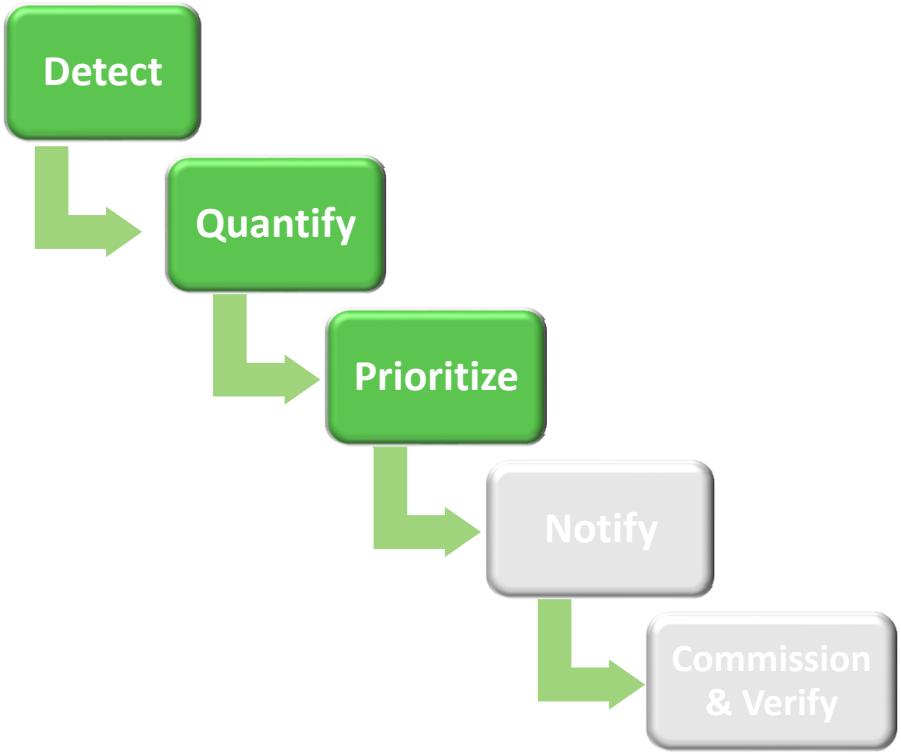
- ❑ **Prioritize -** Issues and the path to resolution based on cost savings, safety or quality risk, and occupant comfort



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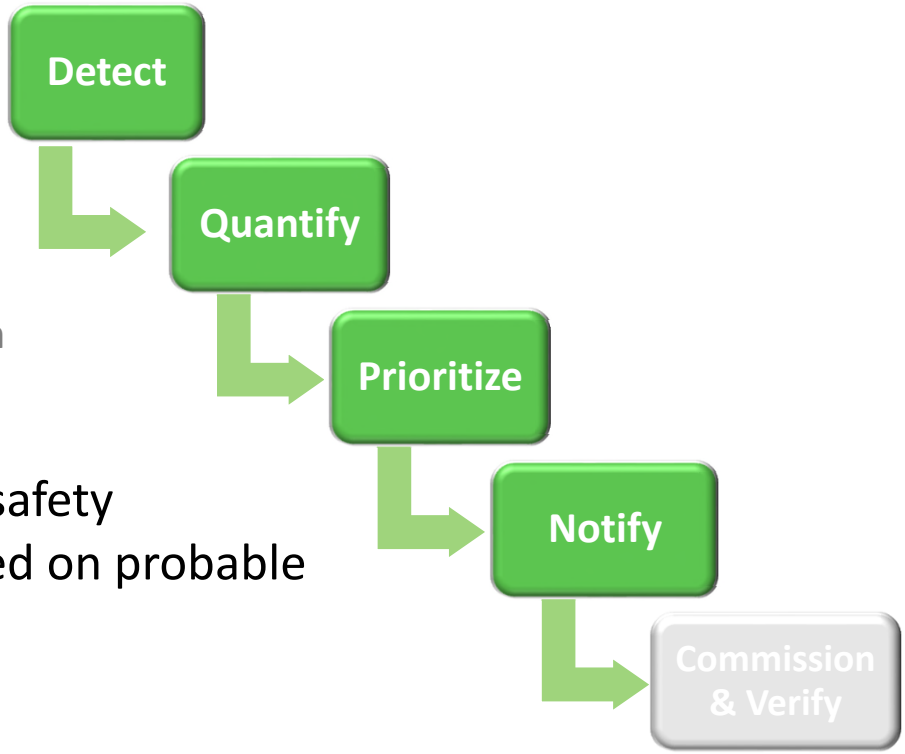

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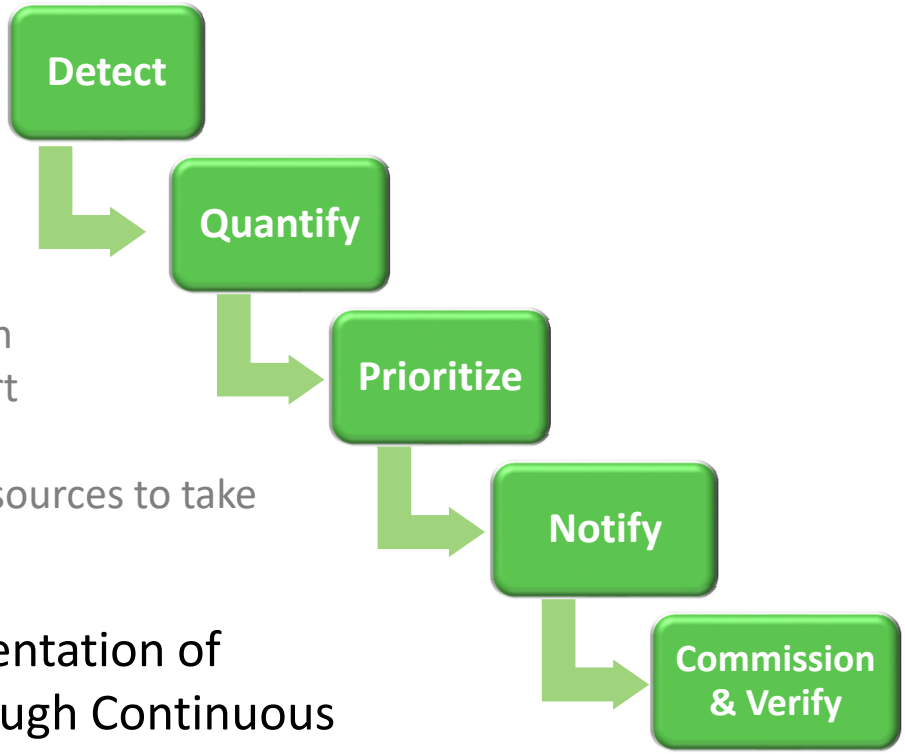
- ❑ **Commission** and **Verify** - Successful Implementation of Improvements. Verify & Protect Savings through Continuous Monitoring



Questions

FacilityConneX
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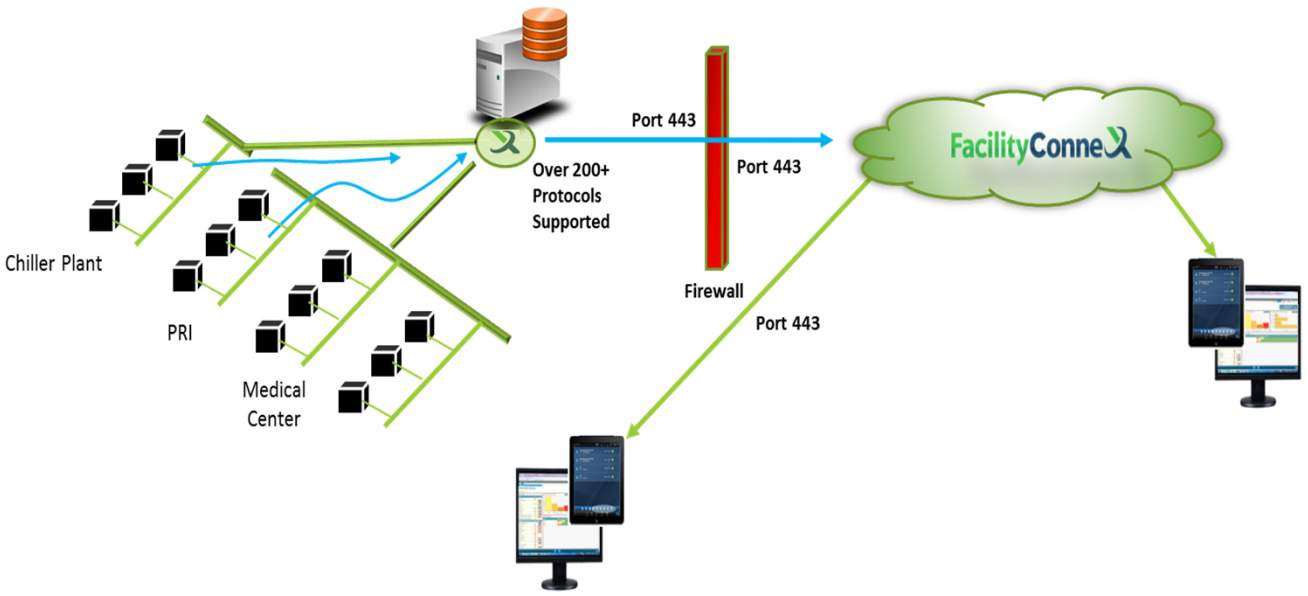
- **Cloud and Analytic Service Started in 2013**
- Customers Connected Worldwide **(US, Europe, Africa, and Asia) Scaling** from Single Sites to 100s of Sites around the Globe
- **Leading Edge Technology** – Industrial Internet (GE), Cloud (AWS), and Security (EMC)
- Approved Measurement and Verification System for **NYSERDA, Eversource, National Grid, and Xcel**
- **Top Experts** in Equipment Optimization

B2Q

- **Independent** consulting engineering firm
- Specializing in energy efficiency, commissioning, and M/E/P design services for commercial, industrial, and institutional clients
- Helped our clients develop **hundreds** of energy efficiency projects
- **Proven experience** with re-commissioning and optimization of **Laboratory, Healthcare, and Hi-Tech Manufacturing Facilities**

Backups

Real Time Connection



Security
- ✓ GE, AWS, and RSA Technologies
- ✓ 256-bit Encypted Pt-Pt VPN Tunnel

Visibility Into 1000+
- ✓ Unlimited Users
- ✓ Unlimited Tags

Pricing
- ✓ Subscription Asset Based
- ✓ Discounting on Volume
- ✓ Optional Services

Best Candidates for MBCx in Labs

- Larger buildings to leverage the power and scalability of MBCx platform
- DDC Building Automation System(s) / Facilities with multiple control systems
- Documentation of controls and mechanical equipment
- Critical research requires monitoring of equipment performance
- Resources available and commitment to act on software recommendations

Adding Value with Monitoring-Based Commissioning

1. **Detect** Lab controls failures, other HVAC issues, and safety concerns
2. **Quantify** the potential energy and cost savings
3. **Prioritize** issues and the path to resolution based on safety, equipment health and occupant comfort.
4. **Notify** the appropriate staff resources to take a recommended action based on probable causes
5. **Commission** and **Verify** successful implementation of improvements and protect savings through continued persistence