

Delta Controls CASE STUDY

Redefining Building Automation for Multi-Site Fitness Centers

A leading multi-site fitness brand with locations across the United States sought to improve energy efficiency and operational control across their facilities. With diverse amenities like hot yoga studios, pools, and kid-friendly spaces, they needed a scalable building automation solution to reduce energy consumption, manage HVAC systems, and enhance the overall member experience.

Introduction

Managing multi-site facilities presents unique challenges, particularly in environments with high energy demands like fitness centers.

A prominent multi-site gym brand, operating facilities across the United States, sought a scalable, energy-efficient building automation solution to streamline their operations. The primary focus of the project was improving energy management in hot yoga studios. Following the successful deployment in those spaces, the project expanded to include HVAC automation, energy submetering, and centralized facility management through the enteliCLOUD platform.



This case study explores how Delta Controls' solutions, including enteliCLOUD, Red5-PLUS Room Controllers, and O3 Edge sensors, optimized operations for a multi-site national gym brand.

Project Overview

Key Focus Areas

- **Hot Yoga Studios:** Efficient temperature control to reduce energy consumption and enhance member comfort.
- **HVAC Automation:** Simplified control of rooftop units and exhaust fans across multiple facilities.
- **Energy Submetering:** Real-time tracking of energy usage to identify savings opportunities.
- **Centralized Management:** A unified platform to manage all facilities from a single interface with multiple users needing different viewing and editing permissions.

Needs & Goals

- **Precise Temperature Control in Hot Yoga Studios:** The studios required rapid heating to 95°F without excessive energy use. They also needed to ensure that energy was only used when classes were in session.
- **Energy Monitoring and Reporting:** The brand wanted to track energy usage in real-time across all sites and generate actionable reports to identify inefficiencies.
- **Scalable and Consistent Deployment:** The solution had to be replicable across all existing and future locations, ensuring consistency in operations and management.
- **Occupancy-Based Controls:** To prevent unnecessary energy usage, systems needed to detect room occupancy and adjust HVAC and lighting accordingly.
- **Future-Proofing:** The solution needed to support future enhancements, such as predictive maintenance and expanded automation.

Design Challenges

- **Variable Energy Needs:** The facilities included diverse spaces with different energy demands, such as yoga studios, pools, large room fitness spaces, smaller workout rooms and locker rooms.
- **Retrofit Requirements:** Existing HVAC systems varied by site, requiring flexible integration strategies to accommodate legacy equipment.
- **Occupancy Detection:** Ensuring accurate occupancy detection in spaces like their yoga studios to avoid wasting energy when rooms were unoccupied.
- **Data Management:** Managing and visualizing large amounts of data from multiple sites in a way that was easy for facility managers to understand and act on.

Solutions Implemented

1. **enteliCLOUD Platform:** The enteliCLOUD platform was implemented as the core of the centralized management system. Key features included:

- **Real-Time Monitoring:** Facility managers can view energy usage trends and equipment statuses in real-time.
- **User Management:** Permissions can be set to control who has access to specific sites, ensuring that only authorized personnel can make changes.
- **Automated Reporting:** The system generates trend logs and energy reports, allowing the gym to track performance and identify inefficiencies.

2. **Red5-PLUS Room Controllers:** Red5-PLUS Room Controllers provided localized control of HVAC equipment and integrating with the enteliCLOUD platform. The controllers:

- **Manage HVAC Equipment:** Control rooftop units, exhaust fans, and other mechanical systems.
- **Act as BACnet Gateways:** Connect various devices and systems within each facility to the centralized platform.

3. **O3 Edge Sensors:** The O3 Edge Sensors were installed in hot yoga studios to manage temperature control based on occupancy. The sensors:

- **Detect Occupancy:** Automatically trigger radiant panels to heat the space when occupancy is detected and class schedule is correctly identified.
- **Optimize Energy Usage:** If no occupancy is detected for three minutes, the system powers down the heating panels to save energy. Even if there is a class scheduled, occupancy must also be detected.
- **Provide Real-Time Data:** Report temperature and occupancy status back to the enteliCLOUD platform.

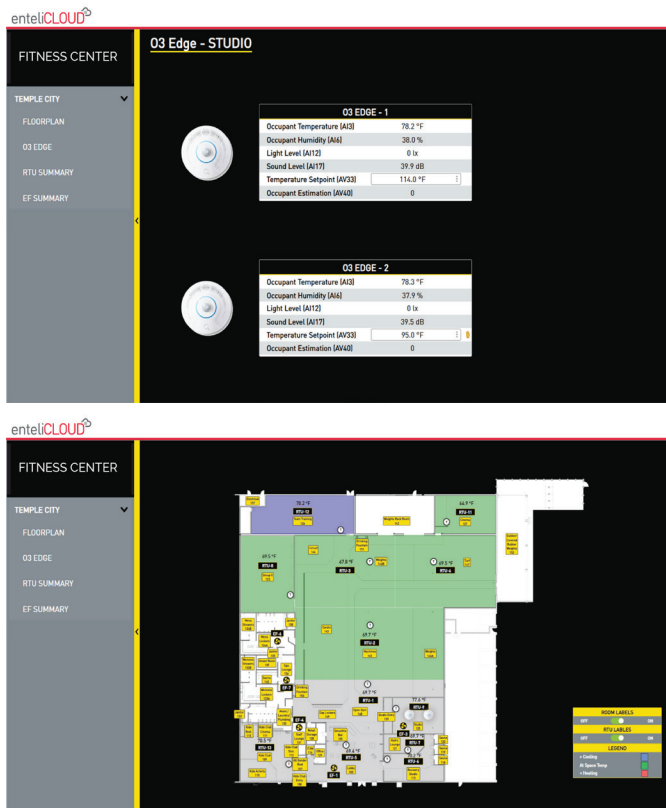


Fig 1.1 and 1.2: enteliCLOUD screen capture from real time monitoring of yoga studio and entire fitness complex.

Outcomes

The solution delivered significant improvements across the gym brand's facilities.

Results:

- **Energy Savings:** The hot yoga studios now operate more efficiently, reducing unnecessary energy usage.
- **Improved Comfort:** Gym members experience consistent and comfortable temperatures in yoga studios and other spaces.
- **Centralized Management:** Facility managers oversee all sites through the enteliCLOUD platform, simplifying operations and reducing administrative overhead.
- **Scalability:** The solution is easily replicable across new locations, ensuring consistency and scalability.
- **Enhanced Reporting:** The system's automated reporting capabilities provide actionable insights that help the brand improve energy efficiency and optimize maintenance schedules.
- **Future-Proofing:** The solution needed to support future enhancements, such as predictive maintenance and expanded automation.

Future Recommendations

Looking ahead, Delta Controls recommends the following future enhancements to further optimize the gym brand's building automation system:

1. **Predictive Maintenance:** Use trend data to anticipate equipment failures, reduce downtime, and extend equipment lifespan.
2. **Lighting Control Integration:** Implement automated lighting controls to further reduce energy consumption and improve occupant comfort.
3. **Expanded Reporting Capabilities:** Develop customized reports to track energy savings, identify patterns, and improve decision-making across all facilities.

Conclusion

Delta Controls' solution has transformed how this multi-site gym complex manages their facilities. By leveraging advanced controls, real-time monitoring, and centralized management through the enteliCLOUD platform, the brand has achieved greater energy efficiency and operational control. The system is designed for future scalability, offering opportunities to implement predictive maintenance and further optimize energy use.



About Delta Controls

At the forefront of building automation systems, Delta Controls provides global solutions through its network of Partners in 80+ countries. Focusing on innovation and sustainability has made the company industry leaders for over 40 years. Delta Controls manufactures all products in Metro Vancouver, Canada, offering dependable, user-friendly control solutions for buildings in the commercial, healthcare, hospitality, education, and leisure markets. As part of Delta Electronics, Delta Controls is committed to leading building automation into a sustainable future.

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