Delta Intelligent Building Technologies

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Delta Controls

Case Studies

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CASE STUDY
St. Luke's + Delta Controls

O3 Operating Room Sensing Solution

At St. Luke's Hospital, Boise, Idaho.

St. Luke's is the region's leader in heart, cancer, women's, and children's services. Its hospitals and cancer centers are nationally recognized for excellence in patient care, with prestigious awards, accreditations and designations reflecting the exceptional care that's synonymous with the St. Luke's name.

Background

The modernization of operating rooms (ORs) is critical for maintaining high standards of healthcare delivery. St. Luke's Hospitals, in Boise, Idaho, U.S.A., selected ATS to upgrade their ORs, to enhance environmental control, improve surgical outcomes and patient care, and meet stringent regulatory requirements.



This case study delves into the technical solutions by Delta Controls as implemented by ATS, the challenges faced, and the successful outcomes and benefits.

The Challenge

Operating rooms are extraordinarily complex environments requiring strict controls over various parameters to ensure patient safety and surgical success. The primary challenges in the design and operation of ORs at St. Luke's Hospitals included:

1. Temperature and Humidity Control:
   - Precise control of temperature (68-75˚F) and humidity (20-60% RH) is critical to prevent surgical site infections (SSIs) and ensure comfort for both patients and staff.
   - Traditional sensors placed on walls and return ducts often provided inaccurate readings due to stratification and distance from the surgical site.

2. Airflow Management:
   - Operating rooms require laminar airflow (25-35 cfm/ft²) to minimize contamination.
   - Airflow must be designed to sweep over the surgical area and exit through return grilles located in opposite corners of the room.
3. Positive Pressure Maintenance:
   - Maintaining a positive pressure differential (+0.01" WC) is essential to prevent contamination from adjacent areas.
   - Accurate and responsive pressure control systems are needed to maintain this differential despite varying external conditions.
4. Regulatory Compliance:
   - Compliance with ASHRAE 170 is mandatory.
   - Ensuring that the environmental control systems meet these standards consistently can be challenging, especially during high-demand surgical procedures.



The Solution, Benefits & Results

The Delta Controls O3 Sense was introduced for its advantageous features including:

- **Composite Sensing:** Combines humidity, composite temperature, passive infrared motion, and multiple other sensors in a single device.
- **Ceiling-Mounted Sensor:** Ensures accurate measurement of space conditions at critical occupant locations, avoiding interference from wall or return air effects.
- **Sensor Fusion TechnologyTM:** Provides composite temperature readings for precise control by integrating multiple sensor inputs.
- **BACnet IP and IoT Capabilities:** Ensures seamless integration with existing Building Management Systems (BMS).

Occupancy Detection and Environmental Sensing:

- Includes motion, sound, light, and thermal sensors for comprehensive environmental monitoring.

Technical implementation by ATS involved:

- **Sensor Placement:** Three O3 sensors were installed on the ceiling to capture accurate readings of the entire OR environment. Traditional sensors remained on walls and return ducts for comparative analysis.
- **Data Collection:** Data was collected over four-months, comparing the performance of O3 sensors with traditional wall and return sensors. Environmental parameters such as temperature, humidity, and pressure were continuously monitored and logged.

Lastly, testing the setup to ensure a successful outcome was completed in three steps:

1. **Initial Setup:** OR environment was equipped with multiple sensors (wall, return duct, O3 ceiling-mounted). Baseline data collection focused on understanding the existing control system's performance.
2. **Testing:** Simulated surgical conditions with mockup room lighting, equipment, and personnel to replicate real operational conditions. Collected temperature and humidity readings from various locations within the OR.
3. **Data Analysis:** Compared the accuracy and responsiveness of O3 sensors against traditional sensors. Analyzed the impact of sensor location on environmental control effectiveness.

Benefits & Results

Installation and configuration of the O3 Sense in the space space lead to numerous successful outcomes:

- **Improved Accuracy:** The O3 provided more accurate temperature readings, particularly at the surgical site, reducing discrepancies by up to 8˚F. Traditional wall sensors showed significant lag and lower accuracy due to distance from critical areas.
- **Energy Efficiency:** More reactive control led to energy savings and reduced hunting of mechanical systems. The O3's quick response to environmental changes minimized the need for constant adjustments, leading to smoother operation and less energy consumption.
- **Enhanced Comfort:** Surgeons experienced improved comfort, and the need for temperature adjustments was minimized. Stable environmental conditions reduced the need for frequent manual interventions.
- **Compliance and Safety:** Sustaining steady temperature and humidity levels reduced the risk of SSIs and ensured code compliance without frequent manual adjustments.

The system's ability to maintain consistent conditions improved overall patient safety and surgical outcomes.

- **Improved System Durability:** Reduced wear and tear on mechanical equipment minimizing maintenance needs and costs with less frequent hunting and adjustments facilitating longer equipment life.

Additionally, with the O3 Sense in-place, several data analysis benefits were realized that could be translated to automated room functions and included:

- **Temperature Control:**
  - O3 maintained a steady temperature with less
  - fluctuation compared to wall sensors.
- **Humidity Control:** O3 provided more precise humidity control, critical for preventing SSI prevention and maintaining staff comfort
- **Pressure Control:** The system effectively maintained positive pressure differentials, ensuring a contamination-free environment.

In conclusion, Delta Controls' innovative O3 sensor technology significantly enhanced the environmental control within St. Luke's Hospitals' operating rooms. The project not only met but exceeded the needs and goals outlined, demonstrating the efficacy of modern sensor technology in critical healthcare environments. This case study highlights the importance of precise environmental control in operating rooms and sets a benchmark for future upgrades in healthcare facilities.



About Delta Controls

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References

1. Stanfill, W., Winter, B., & Arion, T. (2019). "Operating Room Upgrade Pathways & Modernization Solutions." Niagara Summit.

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CASE STUDY
Brooke Army Medical Center + Delta Controls

enteliWEB At Brooke Army Medical Center (BAMC)

Brooke Army Medical Center (BAMC) is the United States Army's premier medical institution. Located on Fort Sam Houston, BAMC, a 425-bed Academic Medical Center, is the Department of Defense's largest facility and only Level 1 Trauma Center. BAMC is also home to the Center for the Intrepid, an outpatient rehabilitation facility. The center is composed of ten separate organizations, including community medical clinics, centered around the Army's largest in-patient hospital.[1] BAMC is staffed by more than 8,000 Soldiers, Airmen, Sailors, Civilians, and Contractors providing care to wounded Service Members and the San Antonio Community at-large.

Background

Brooke Army Medical Center (BAMC) at Joint Base San Antonio-Ford Sam Houston in Texas stands as the largest and most robust military healthcare facility within the U.S. Department of Defense. Encompassing over 2 million square feet, it is equipped to deliver comprehensive medical services to military service members, their families, veterans, and civilian emergency patients.



BAMC's extensive facilities include specialized isolation rooms, critical care units, and surgical services. This case study explores the implementation of Delta Controls' Infection Control Dashboard via enteliWEB with partner J & J Maintenance and help from Delta Controls Partner, Team Solutions to enhance infection control, environmental management, and operational efficiency.

The Challenge

BAMC faced significant challenges in maintaining stringent environmental controls across its vast facilities to prevent infections and ensure operational efficiency:



- **Infection Control:** Monitoring in isolation rooms and critical care areas, with precise, real-time data display and alerts for pressure changes and environmental conditions.
- **Data Integration and Management:** Integrating data from the extensive network of over 80,000 I/O points, 5,000 VAV boxes, and 128 air handling units for accurate environmental monitoring.
- **User Interface Design:** Quickly accessing critical data and responding to alarms using an intuitive interface that could be easily used by facility engineers and nursing staff.
- **System Scalability:** Ensuring ongoing technological advancements and expansions of the building automation system (BAS).



The Solution

Delta Controls' infection control dashboard, integrated via enteliWEB, was implemented to address these challenges, featuring:

- **Comprehensive Environmental Monitoring:** Monitoring humidity, temperature, air pressure, and other critical parameters throughout the extensive facility.
- **Real-Time Data Display and Intuitive Alarming:** Optimizing response time to environmental deviations through live data visualizations from critical areas like isolation rooms.
- **User-Friendliness:** Interface tailored to the needs of different user groups within the hospital to ensure efficient interaction with the system.
- **Historical Data Logging:** Analyzation of trends and proactive management of environmental conditions through detailed records of data.

Outcomes & Benefits

The implementation led to notable improvements:

- **Enhanced Infection Control:** The real-time dashboard provided immediate alarming and improved the accuracy of environmental monitoring, significantly reducing infection risks.
- **Operational Efficiency:** The user-friendly design allowed for quicker alarm resolutions, improving patient safety and reducing periods of operational downtime.
- **Energy Efficiency:** Optimized HVAC control resulted in significant energy savings while maintaining necessary environmental conditions.
- **User Satisfaction:** Both engineers and nursing staff reported high satisfaction due to the system's effectiveness and ease of use.

Conclusion

The use of enteliWEB's advanced infection control dashboard at BAMC significantly enhanced the facility's capability to manage critical environmental parameters effectively. This project not only met but surpassed the initial goals, setting a benchmark for environmental control and infection prevention in healthcare facilities.

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The Scarborough Hospital
Scarborough, ON

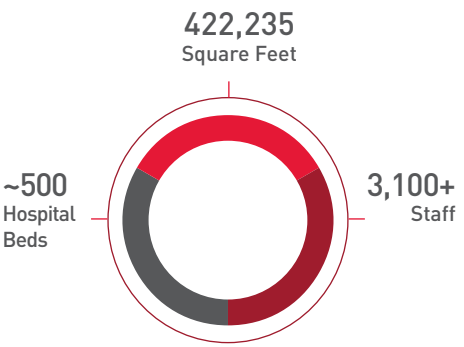
Overview

Vertical	Site build	Site size
Health Care	Ongoing	422,235 ft²

The Scarborough Hospital is a hospital corporation based in Scarborough, Ontario. Affiliated with University of Toronto's Faculty of Medicine, the hospital has two campuses (General and Birchmount), along with five community satellite sites. In 2009, the new Emergency and Critical Care Centre opened at double the space of the previous Emergency department. It featured a new infection control and isolation protocol, as well as five care zones that are designed for pediatric, Rapid Assessment, Critical Care, Acute Care and Ambulatory Care.

Overview:

In addition to its community-based health care services, The Scarborough Hospital is also known for its dialysis, maternal newborn and pediatric, vascular surgery, and mental health and crisis programs.





Energy Savings

Delta Legacy Upgrade

DDC System Maintenance

New Construction

Mechanical Maintenance

3rd Party Controls Retrofit

The Challenge

ESC Automation had to design and install the HVAC system in the new zones while maintaining the legacy systems in the hospital.

ESC was involved in the construction and design of the Emergency and Critical Care Centre in 2009. They were responsible for providing a new Delta Controls Building Automation System (BAS) to control the heating and cooling systems in the new addition, while maintaining the legacy Delta BAS in the hospital.

As the new addition was to be connected to the existing hospital, various service tunnels under the building needed to be rerouted for the new services. With the changes, the existing Delta Controls BAS network and mechanical equipment scheduling needed modification. There were significant time constraints put on the project, and coordination was essential.

To find out how Delta overcame this challenge, please turn over. →

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The Scarborough Hospital
Scarborough, ON



The Solution

The existing network wiring and pneumatic controls for the remaining equipment in the tunnels were rerouted. In the new addition, a DSM-RTR was used to connect to the Ethernet BAS network in the hospital. Delta's DNT-T221s were used to control the local reheat coil valves in the patient areas.

ORCAview	DSM-RTR	DSC Series	DNT Series
Ethernet to MS/TP system management software	Ethernet to MS/TP system manager	Ethernet enabled, fully programmable system controller	Network stat equipped with LCD screen and keypad

The Benefits

ESC was able to get the hospital onto V3, Delta Controls' latest hardware platform. This allowed the site to utilize Delta Controls' ORCAview software so that the Building Management System could be managed through one easy-to-use interface. These changes improved operator access to the BAS. They also improved the network architecture and allowed the legacy V2 hardware to be maintained.

The Results

The new and existing building controls were enhanced and integrated. This, coupled with the faster communication speeds and increased trending capabilities of the V3 product line, allowed the hospital to proactively manage their facility and implement energy saving strategies.

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CASE STUDY
Access Control at United Data Center

Access Control in a Multi-Tenant Data Center, Data Holdings and United Systems:

Introduction

Owned and operated by the Forest County Potawatomi tribe, Data Holdings in Milwaukee is more than a data center, it's a testament to cultural values and forward-looking stewardship. Guided by the Potawatomi principle of planning for the next seven generations, the tribe envisioned a facility that would stand as a model of resilience, sustainability, and security.

This philosophy shaped every decision in the creation of Data Holdings: from the choice to build to LEED Gold standards, to the investment in solar fields, redundant power, & the use of non potable water for chilling and cooling infrastructure. And finally, to the design of an access control system that could evolve alongside the demands of tenants and regulators.



In over 11 years of continuous operation, Data Holdings has achieved what few facilities can claim:

- Zero downtime across its mission-critical systems.
- No physical security breaches or incidents.

Data Holdings and United Systems embarked on the access control update project with months of meticulous planning coming down to one very busy weekend to fully transition over a new Delta Controls Access Control System without any adverse effects to Data Holdings Clients.

Introduction

Data Holdings was purpose built to serve a diverse community of clients each with unique security policies and compliance requirements when it comes to renting space in the data halls. Unlike a private data center, this multi-tenant facility needed to provide segmented access and detailed audit trails, ensuring that each customer could trust that their data and equipment were fully protected.

- **Granularity of Access:** The system needed to provide tiered control, from building entries to cabinet and rack-level access, in order to support colocation clients with varying compliance requirements.
- **Critical Infrastructure Protection:** Redundant systems demand safeguards to ensure that human error could not compromise dual-feed resiliency.

- **Sequential Access Requirements:** Certain spaces, such as electrical rooms and the main lobby, required tightly controlled entry sequences (man-traps) to prevent simultaneous or unauthorized access.
- **Credential Management Simplicity:** The system needed to streamline the enrollment and deactivation process for a dynamic user base, enabling Data Holdings to maintain strict audit trails and meet rigorous regulatory compliance requirements.

At the same time, it was critical that the facility remained aligned with the tribe's long-term sustainability vision, integrating future-ready energy monitoring to ensure that every decision down to the kilowatt-hour could be accounted for and optimized.

The Solution – Red5 Access & enteliWEB Flexibility

Data Holdings, working with United Systems, chose Delta Controls' Red5 access control ecosystem combined with the enteliWEB supervision platform to address these challenges. The solution leveraged Delta's open BACnet foundation and programmable GCL logic, making it possible to deliver capabilities that most proprietary access control systems cannot match.

Key features of the deployment include:

- **Custom API Integration:** Using enteliWEB's flexibility, United Systems developed a custom API that connects directly into the other 3rd party technologies in the access platform, enabling powerful integrations and automations unique to the data center.

Biometric Security: TBS biometric readers were deployed for dual authentication, requiring both a badge and a fingerprint for access in critical areas. This dual-layer security ensures only verified personnel enter sensitive or customer specific zones. This can be used all the way down to the individual cabinet level as required.

- **Programmable Man-Traps:** GCL programming allowed for advanced man-trap logic:
    - In electrical rooms, if one side of the dual-redundant power room is open, the other is locked, ensuring no compromise to redundancy.
    - In the main lobby, the outer door must close fully before the inner door can open, creating an airlock-style barrier against unauthorized entry.
- **Autonomous Badge Management:** Internal staff now manage all badge creation, expiration, and revocation directly. This includes:
    - Streamlined biometric credentials with subsequent on-site badge printing.
    - Automatic credential expiration based on time of last usage per requirements of each data center customer.



- **Scalable Infrastructure:** The Red5 hardware architecture provides a modular foundation, allowing the facility to expand its access control system as new tenants, doors, or racks are added without disruption.

Results – Security and Autonomy Without Compromise

The implementation has transformed Data Holdings' security operations:

- **Continuing an Unbroken Track Record:** 11 years and counting of operation without downtime or physical security incidents
- **True Autonomy:** Data Holdings can now can manage credentials, permissions, and system logic without relying on vendors or fearing vendor lock in.
- **Tenant Confidence & Satisfaction:** Rack-level and cabinet-level security provide the highest assurance for colocation clients.
- **Resiliency in Design:** Redundant infrastructure is protected by man-trap logic that ensures no single human action can compromise system uptime.
- **Future-Proof Security:** Open protocols, biometric integration, and API flexibility guarantee the system can evolve with industry demands.

Sustainability and Future Plans

Security was only part of the story. True to the Potawatomi principle of planning for seven generations, Data Holdings also designed the facility with sustainability in mind. Already LEED Gold certified, the center is now working with United Systems to expand its energy monitoring capabilities.

The roadmap includes:

- **Rack and Branch Circuit-Level Metering:** Monitoring down to the rack level as well as the electrical branch level to increase energy visibility, identify consumption patterns and inefficiencies.
- **Tenant Energy Reporting:** Providing transparent reports for tenants to track their own usage and carbon footprint.

This next phase ensures the data center can continue to optimize efficiency and demonstrate leadership in sustainable operations.

Conclusion

Data Holdings demonstrates how tribal values, partner expertise, and open technology can come together to create a facility that is both secure and sustainable. By combining Delta Controls' Red5 access ecosystem with enteliWEB's programmability, United Systems delivered a solution that meets today's stringent security needs while laying the foundation for tomorrow's energy intelligence.

For the Forest County Potawatomi, this is not just about protecting data today, it's about building a data center that will serve generations to come.



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Toronto French School
Toronto, ON
Canada

Overview

Vertical
Education

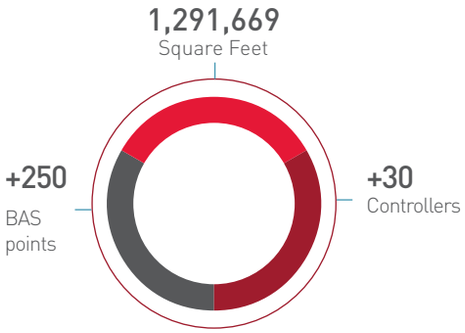
Project Type
Retrofit

Site size
1,291,669ft²

The Toronto French School (TFS) is an independent, bilingual, co-educational school from pre-kindergarten to Grade 12. Founded in 1962, TFS has two campuses and Delta Controls Toronto Inc. was responsible for providing a BAS system into multiple buildings on the Toronto campus.

Overview

Toronto French School was the pioneer of French immersion education in Canada, and accepts students from the age of 2 until they enter university







The Challenge

The installation was done while the school year was still in session.

Delta Controls were required to provide comprehensive solutions concurrently for different buildings at the campus from a software upgrade, to boiler plant integrations, and a complete BAS replacement. Installation of the BAS systems with minimal interruption in the lives of students and faculty was a priority for both Delta Controls Toronto and the Toronto French School.

To find out how Delta overcame this challenge, please turn over. ⟶

Delta™ CONTROLS

Toronto French School

Toronto, ON Canada



The Solution

Delta Controls Toronto Inc. was able to upgrade and retrofit the existing legacy third party system to enteliWEB (Delta Controls' building management software) within a very short time frame. Delta Controls Toronto Inc. organized the electrical trades to work during the unoccupied periods allowing seamless installation. Both the retrofit and upgrade was done with minimal impact to the building occupants as possible.

enteliWEB	DSC Series	DVC Series	DAC Series
• Online dashboard based BMS software	• Scalable, programmable lighting controllers	• Fully programmable VAV controller	• Fully programmable application controller

The Benefits

The new installation and upgrade optimized the BAS throughout Toronto French School. Building managers had fewer climate comfort issues and the equipment performance was improved.

System diagnostics were made more effective because the existing building controls were integrated with each other with faster communication speeds.

The Results

The various system enhancements created a large seamless unified building system network which allowed the building managers at TFS to manage and control their multiple facilities more effectively.

To find out about Delta Controls Toronto

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CASE STUDY
St. Thomas Moore + Delta Controls

The Power of O3 Lighting At St. Thomas Moore Collegiate School

St. Thomas More Collegiate (STMC) is a Catholic co-educational independent secondary school (grades 8 – 12), in Burnaby, British Columbia (BC), Canada, that has offered young men and women from throughout British Columbia's Lower Mainland an extraordinary education and a second home for almost six decades. Since 1960, when three Christian Brothers opened the school to 125 Knights, STMC has helped shape thousands of young minds and touched the lives of their families.

Background

In 2023 St. Thomas Moore Collegiate (STMC), a private secondary school (Gr. 8 –12) located in Burnaby, B.C. Canada completed a lighting upgrade in their Learning Resource Centre. The space provides supplemental aid to students with diverse learning needs, particularly Dyslexia and Autism Spectrum Disorder.

The upgrade's goal was to modernize the space both in design and functionality, taking it to the next level to create a comfortable, productive learning environment.



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CASE STUDY • Delta Controls + Ainsworth

Oregon Department of Corrections – Partnering for Sustainable Operations and Energy Insight

The Oregon Department of Corrections (ODOC) oversees the state's correctional facilities with a strong commitment to sustainability and rehabilitation. ODOC actively works to reduce energy consumption and environmental impact. Additionally, the department offers comprehensive job training programs for adults in custody, including automotive technology, construction, and cosmetology, equipping them with valuable skills for successful reintegration into society.

Introduction

In a secure institutional environment where performance, energy accountability, and occupant well-being must coexist, the Oregon Department of Corrections (ODOC) launched a system-wide modernization initiative focused not on wholesale mechanical replacement, but on smart, data-driven control upgrades. With a partnership spanning more than two decades, ODOC, Ainsworth, and Delta Intelligent Building Technologies supplying Delta Controls products leveraged existing infrastructure and built trust-based service support into an energy-focused transformation—reducing complaints, lowering energy use, and transforming facility operations with zero capital expenditure.



This case study explores how Ainsworth, through strategic Delta Controls upgrades and long-term partnership, enabled the Oregon Department of Corrections to reduce deferred maintenance, lower energy consumption, and empower facility staff—all without major capital investment.

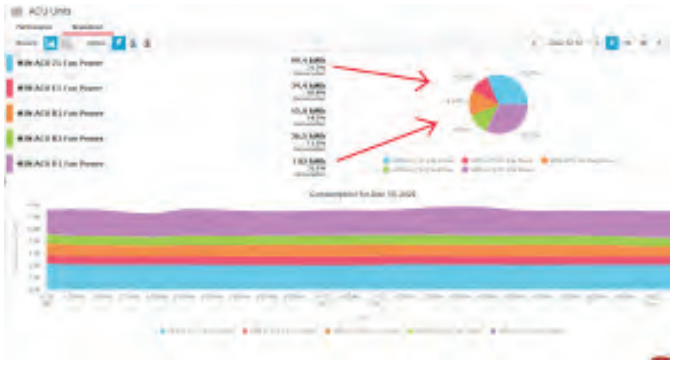
Project Overview

At a Glance

- Client: Oregon Department of Corrections (ODOC), overseeing secure state-run facilities with a focus on cost effective sustainability and energy use.
- Scope: Targeted BAS modernization across campus, focusing on energy monitoring, intuitive control strategies, and long-term system support.
- Goal: Reduce energy consumption, address deferred maintenance, and improve facility operations through scalable, cost-effective control solutions without major mechanical replacement.

Challenges

- Manual overrides were commonplace—Main equipment like boilers and chillers were being run manually in July.
- Facility maintenance staff handled 3 to 5 hot/cold complaints daily, often without tools to determine root cause.
- Complex legacy programming made systems unmanageable, even when hardware remained functional.
- While the facility's original install dated back to 2000, the hardware remained largely intact—making justification for change difficult
- A deferred maintenance backlog created a proposed project budgeted at $2.1 million - with constrained capital improvement budget.
- Energy bills were climbing, with limited submetering or visibility to explain increases.
- Facilities staff were spending time fighting daily emergency issues, rather than performing preventative maintenance.



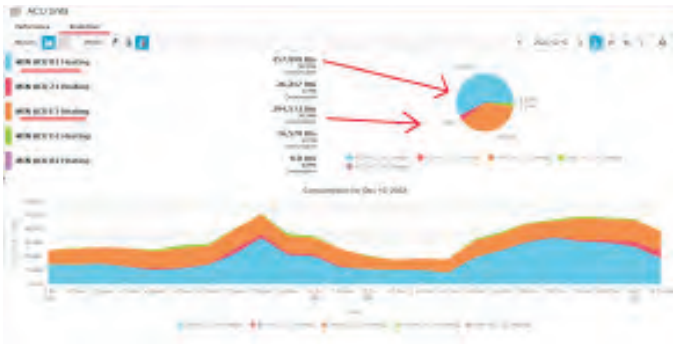


Figure 1.1 :and 1.2 Show the easy to visualize ODOC enteliWEB energy module for different mechanical systems after project completion.

Solution Implemented

1. Energy Monitoring and Visualization with enteliWEB.

   Delta Controls' enteliWEB energy module was deployed across key sites, enabling ODOC to use real-time electrical metering and pie-chart visualizations to identify inefficiencies in their major equipment establishing a system that provided:

   - Monthly comparisons of AHUs, chillers, and boilers.
   - Data-backed justification for deferred maintenance priorities.
   - Pressure relief from state-level inquiries about rising energy costs.
   - An Easy and Intuitive Platform to view data and assess and compare loads.

   These dashboards offered digestible energy analytics without overwhelming staff—providing actionable insights without alarms or complex fault diagnostics.

2. Targeted Upgrades and System Simplification
   - Replacing failed VFDs identified through energy trending.
   - Upgrading only main plant controllers and AHUs – no need to update application specific controller.
   - Modernize BAS network infrastructure.
   - Keeping original VAV wherever feasible, minimizing disruption (only 14 out of 300 needed replacement).
   - Rewriting controls sequences to remove unnecessary complexity and allow predictable and outcome driven operations for maintenance techs.

   In the words of Eric Alby at Ainsworth, "they just wanted a system that made sense–and now they have it."

3. Partner-Driven Maintenance Model

   Implementing a partner driven model meant Ainsworth's technicians were already familiar with the site, enabling:

   - Value engineering that optimized the scope and focus toward areas of greatest need.
   - On-site, remote support that reduced reliance on costly service calls.
   - Proactive maintenance tools, such as actuator monitoring and damper verification.
   - A trusted advisor for technical and mechanical upgrades and fostered a design partnership focused on future-ready, flexible expansions aligned with long-term energy goals.

Outcomes

Energy Reduction Without Major CapEx

- Electrical Savings:

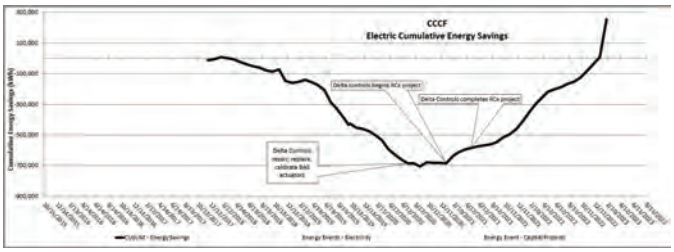
  Meter 1: 25% reduction (2,251,900 kWh ~ 1,683,200 kWh)
  Meter 2: 21% reduction (2,699,400 kWh ~ 2,126,100 kWh)
  Meter 3: 15% reduction (2,438,400 kWh ~ 2,049,300 kWh)
  Meter 4: 14% increase due to chiller commissioning (expected to normalize).
  Overall electrical savings: 17% (Fig. 3.2)

  These outcomes were achieved with no large-scale mechanical replacements—they came from controls optimization, smarter programming, and service continuity.

Operational and Cultural Shift

- Deferred maintenance estimated a project costing $2.1 million but reduced to $700k through the unique controls strategies implemented by Ainsworth.
- Created a surplus of funds replace VFDs and other projects that wouldn't have been able to be completed otherwise.
- Facilities staff morale improved; instead of complaints and urgent issues having the ability to focus on their true jobs.
- Improved safety and comfort for residents and staff alike, including better air quality management.
- Fewer hot/cold complaints, improving overall working conditions and safety posture; going from approximately 156 to 17 annually.

  What began as a controls upgrade became a transformational shift—cutting $1.4 million in deferred maintenance, restoring staff morale, and establishing Ainsworth as a trusted partners in ODOC's future-ready operations.



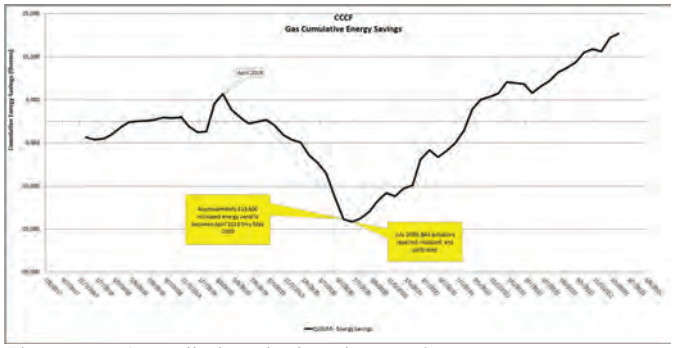


Figure 3.1: Overall electrical savings: 17%
Figure 3.2: Natural Gas Savings. 10% reduction of 259,380 therms to 233,502 therms.

Conclusion

The ODOC project proves that meaningful operational and energy improvements don't require major mechanical overhauls—just the right combination of intelligent controls, clear data, and trusted service.

By focusing on reprogramming, energy visibility, and targeted upgrades, ODOC cut energy use, reduced service calls, and gave staff the tools to maintain buildings proactively.

This success was made possible by the long-term partnership with Ainsworth and Delta Controls, who provided not just technology, but continuity and support. As ODOC continues to track the implemented changes the results speak for themselves:

- Lower costs
- Better performance
- Smarter, more sustainable operation of critical infrastructure

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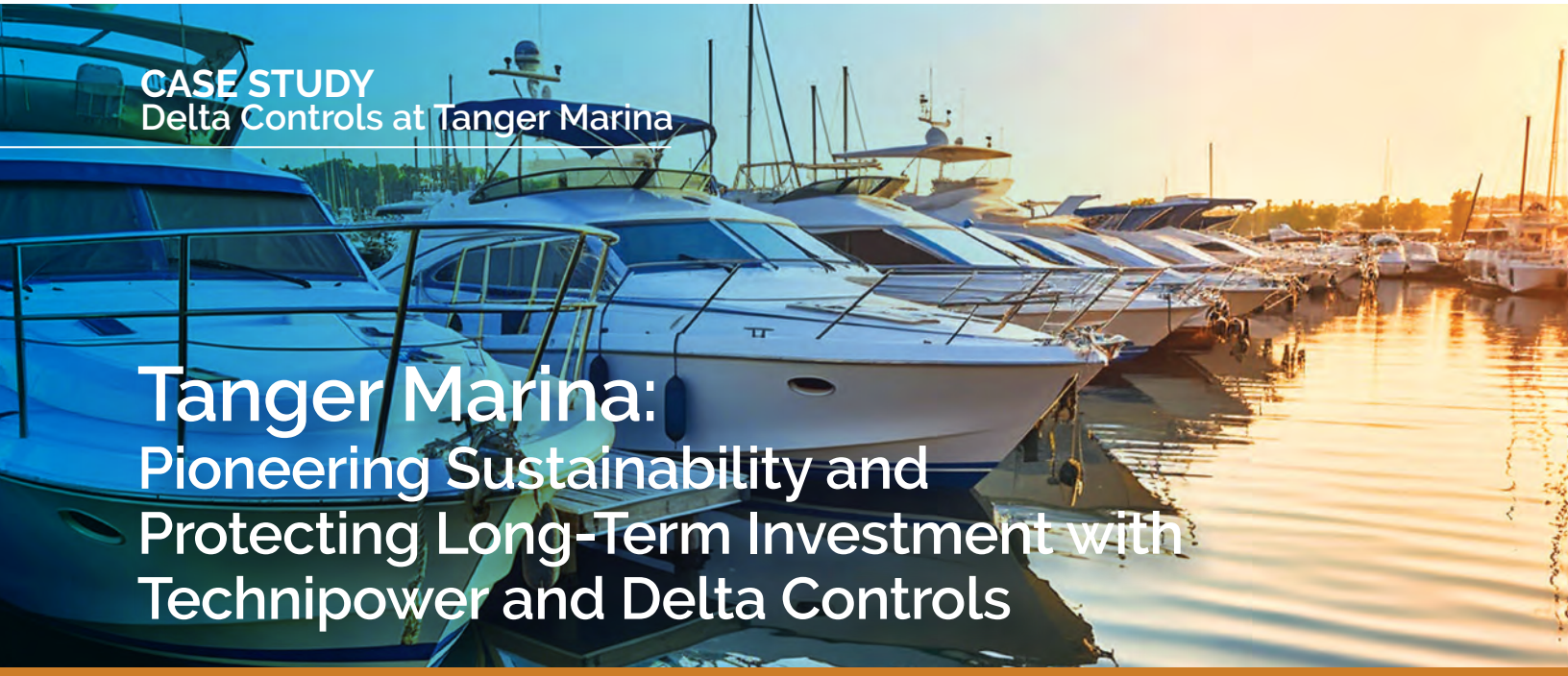


CASE STUDY
Delta Controls at Tanger Marina

Tanger Marina: Pioneering Sustainability and Protecting Long-Term Investment with Technipower and Delta Controls

Tanger Marina project is the Kingdom's first urban marina, with a future total capacity of more than 1,400 moorings in two basins. It enjoys an exceptional location at the crossroads between the Atlantic Ocean and the Mediterranean, between the West and the East. It is a veritable gateway between Europe and Africa. Its integration into the city at the foot of the medina and facing the bay is unique.

Introduction

Tanger Marina stands as Morocco's premier urban marina, strategically located at the intersection of the Atlantic Ocean and the Mediterranean Sea, bridging Europe and Africa. With over 1,400 berths planned, this marina represents not only a significant economic investment but also a visionary commitment to sustainability and operational excellence.

In collaboration with Technipower, a Delta Controls Partner, The Tanger Marina sought a comprehensive Building Management System (BMS) solution designed to safeguard their investment through meticulous energy tracking, operational efficiency, and proactive asset management.



Challenges and Goals

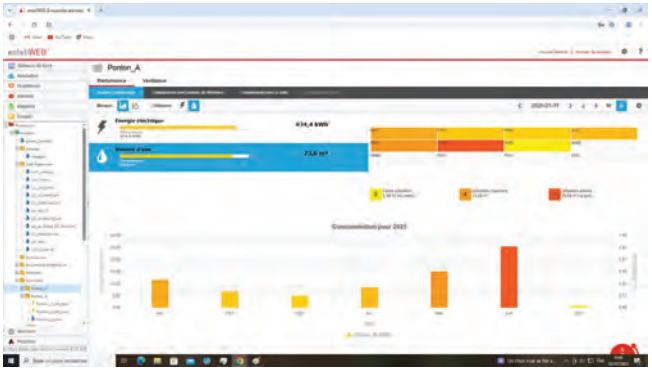
Operating a marina presents unique challenges, especially related to environmental conditions. Frequent flooding and waterlogged areas made traditional infrastructure installation complicated. Cable routing, termination, and sensor installations demanded meticulous planning and precision execution to ensure accurate performance in harsh maritime conditions.

Tanger Marina's primary goals were:

- Deploy a system to be able to invoice the marina users as well as the leased spaces used for commercial purposes, such as cafés, restaurants, and stores.
- Accurate monitoring of water and electricity consumption.
- Real-time detection of leaks and abnormal consumption patterns.
- Seamless integration of lighting systems for optimal energy efficiency.
- Preservation of long-term asset value through operational management.

Delta Controls and Technipower's Solution

Technipower's expertise, combined with Delta Controls' advanced technology, provided Tanger Marina with an innovative, integrated solution designed for durability, precision, and ease of management.

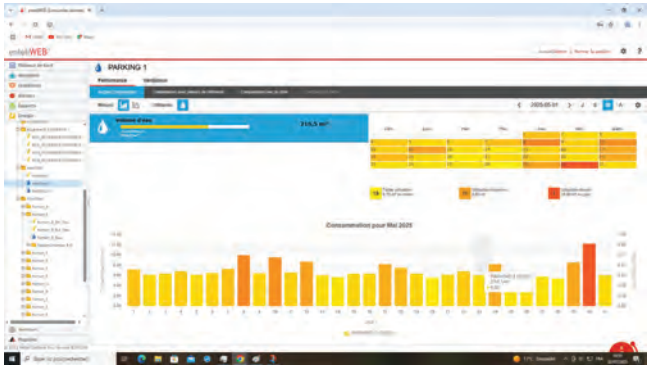


Key Technical Components:

- **17 JACE 8000 Controllers**: Robust data acquisition and management through Modbus protocols from electric and water flow meters throughout the facility to monitor and track usage.
- **21 EBCON Units:** Enabled seamless integration and reliable data processing of data collected from the JACE controllers.
- **enteliWEB Management Software:** Offered powerful real-time visualization, reporting, and analytics, supporting comprehensive oversight and operational efficiency.

Energy and Water Consumption Monitoring:

- Smart Modbus-compatible electricity meters and ultrasonic flowmeters installed at each yacht docking station provide precise measurements for individual vessels.
- Real-time data acquisition through JACE controllers ensures detailed and accurate billing and consumption insights.



Innovative Lighting Integration:

The marina's lighting systems were fully integrated into the Delta Controls BMS with EBus controllers, delivering unprecedented energy efficiency and operational reliability. There are light transmitters that control outputs on the EBM-404-H modules to activate contactors for the quay lighting.

This integration allows facility management to automate and optimize lighting schedules, significantly reducing unnecessary energy consumption and maintenance costs. It also enhances safety and comfort for marina guests and tenants.

Outcomes and Results

Technipower's Delta Controls solution delivered remarkable outcomes, transforming Tanger Marina into a showcase for sustainability and efficient resource management:

- **Precision Billing:** Real-time, individualized consumption data enables accurate, automated billing for yacht owners, commercial tenants, and restaurants.
- **Leak and Abnormal Usage Detection:** Advanced analytics within enteliWEB proactively identify water leaks and abnormal electricity usage, allowing swift corrective action, reducing wastage, and significantly lowering operational costs.
- **Optimized Lighting Management:** Integrated lighting control significantly reduces energy usage, maintenance needs, and operational expenses, supporting Tanger Marina's sustainability commitments.



Commitment to Sustainability

Tanger Marina itself demonstrates a robust commitment to sustainability, aspiring to be a model of responsible urban marine development. With dedicated sustainability practices and the integration of advanced monitoring systems, the marina actively reduces environmental impact and promotes sustainable practices across its operations.

Delta Controls' BMS solution, expertly deployed by Technipower, aligns perfectly with this vision providing not just short-term operational efficiency but also ensuring long-term protection of the marina's significant economic and environmental investment.

Conclusion

Technipower's integration of Delta Controls technology at Tanger Marina sets a benchmark in sustainable marina management. The combination of innovative energy and water monitoring, proactive maintenance capabilities, and efficient lighting management ensures that Tanger Marina can confidently maintain operational excellence, environmental responsibility, and long-term value preservation for decades to come.

Through this collaboration, Tanger Marina has not only solidified its status as Morocco's premier urban marina but also stands as a global example of intelligent, sustainable infrastructure investment powered by Delta Controls.

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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The Challenge

The spectrum and intensity of light sources have significant impacts on health, affecting the daily aspects of student's lives, including sleep and energy levels.



In a classroom setting, the biggest challenge is maintaining a uniform spread of light across all surfaces of the space. It can be detrimental to a student's energy level when you have a wall being lit at 110-foot candles (the measurement of illuminance or light-intensity) and the surrounding space being lit at 20-foot candles, the stark contrast forces the pupil to open wide when looking up and narrow when looking down resulting in fatigue of occupants. The color temperature of light also impacts each occupant's circadian rhythm which constitutes the physical, mental, and behavioral changes experienced throughout the day.

The Solution, Benefits & Results

The Delta Controls O3 Edge, combined with Amerlux's innovative lighting fixtures and the wireless technology of EnOcean delivered by Echoflex, provides a unique automated solution in key areas of the learning space. This solution regulates occupant comfort by delivering precise occupancy data, room temperature, light intensity levels, and color.

Benefits & Results

Optimized regulation of circadian rhythms reducing fatigue during occupancy

Improved student sleep for better learning experiences each following day

Overall increase in space comfort for both students and faculty

Improved temperature and occupancy detection by combining multiple sensors through O3 sensor fusion technology

Energy and cost savings through building automation technology

Touchless control for the benefit of custodians and other building operators

Testimonials

"I was trying to think of specifics to send you and I think the biggest thing I can say is that I have heard nothing from any of the end users meaning everything has worked out great! I love the flexibility in the system going forward and a simple text for changes and it's done without any site visit. Anyone in the maintenance end of things like me would love this throughout their buildings everywhere. While it may be more costly up front the savings on labor alone, I'm sure covers the added cost over time."

Maintenance Supervisor, St. Thomas Moore Collegiate

"The lighting has been great! It has been so nice to be able to dim the lights for students and to change the settings so easily. The settings are fantastic. Thanks so much!"

Learning Resource Coordinator, St. Thomas Moore Collegiate

"We are really enjoying the new lighting in the Physics lab. They are nice and bright, and the control system has been very useful. We are configured with a) all lights on b) 1/3 of the lights on and c) a single light as a spotlight, all of which I have used at different points this year."

Joe Muise, Physics and Earth Sciences Teacher

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BCIT
Burnaby, BC Canada

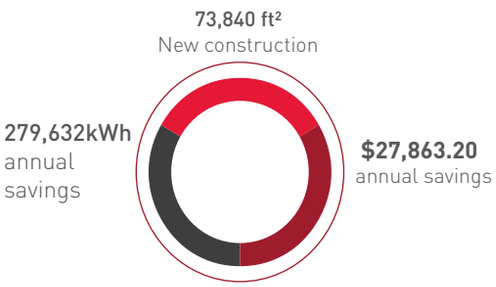
Overview

Vertical	Site build	Site size
Sustainability	2010	73,840 ft²

British Columbia Institute of Technology (BCIT), was renovating their Burnaby campus. ESC Automation was responsible for installing the BMS in a new campus building which included a student services area and the campus welcome center for visitors and prospective students. There was laboratory and classroom renewal in three other wings along with additional faculty offices. The project also included seismic upgrading, the installation of additional fire suppression sprinklers, and upgrades to electrical service and the campus IT network.

Overview:

Established in 1964, BCIT is a public polytechnic institution. With five campuses located in Metro Vancouver, Burnaby is the main BCIT campus. BCIT has over 53,000 full-time, part-time and graduate students.





The Challenge

Despite the building being designed and commissioned to LEED Gold standards, there were several operating faults which needed to be improved.

After observing the BMS in its first three years, the building managers had several concerns. There was a chilled beam application which was causing an internal humidity build-up. To address this concern, a cooling strategy was put in place, which attempted to reduce dew point precipitation by reducing the cooling capacity of the chilled beams. Unfortunately this strategy resulted in less than optimal occupant comfort and needed to be changed.

Heat pumps were overworked during shoulder seasons, causing uneven temperatures and high energy use throughout the campus.

The original heat pump sequencing rejected maximum heat to the ground loop, which conflicted with the cooling requirements and resulted in uneven temperatures within the building. The overdrive of the heat pumps also caused system trips and excessive wear and tear on the heat pump system. All of these concerns needed to be resolved while the building was in full operation- without impacting the students learning environment.

To find out how Delta overcame this challenge, please turn over. →



BCIT
Burnaby, BC Canada



The Solution

ESC Automation programmed the air handling unit to use as much outside air as possible for free cooling. The dehumidification sequence did not override the outdoor air dampers to 100% but allowed the DDC system to take control of the dampers based on temperature requirements in the space. With this approach, the final supply air temperature is controlled to reach the target setpoint by reheating the air being delivered through the heating coils using recycled or waste heat from the multi-stack condenser side. Newly mixed relative humidity and the mixed return temperature sensor calculates the necessary dewpoint for cooling to extract excess humidity being fed from outdoor air and return air damper sections. Underground geothermal field pumps utilized free cooling from the geo field by opening evaporator valves when minimal cooling is required. Excess waste heat is rejected in three stages. First through the building load to satisfy space demand, second through heat rejection coils in the AHU and exhaust system, and third via the geothermal field.

ORCAweb
- Web based BMS management software

DAC Series
- Fully programmable application controllers

DSC Series
- System, programmable controllers

The Benefits

Now that the air handling units, multi-stack heat pumps, and pumping system were no longer working unnecessarily on full capacity, BCIT was able to save money and carbon.

ESC was able to simplify a very complex solution and simultaneously deliver improved systems performance and occupant comfort. Being able to use the additional wasted heat that was created for cooling loads increased energy savings for BCIT. Using outside air for cooling instead of cooling the inside air resulted in additional energy savings, along with improved air quality and a new dehumidification sequence.

The Results

BCIT Burnaby saved approximately 279,632kWh a year with the new implementation. This created an annual savings of $27,863.20 for BCIT.

Implementing the energy optimization process on the geo field, multi-stack heat pumps, heat exchangers, chilled water beam strategy and new AHU sequences resulted in savings of approximately **$27,863** a year.

Further savings on maintenance and operating costs were realized because the equipment ran more efficiently and there was less wear and tear. The extended equipment life has helped BCIT to defer capital costs.

"Following project turn over, BCIT decided to engage ESC directly to provide ongoing commissioning and operational oversight of the new building. This ensured the facility delivered on its objectives of high levels of occupant comfort, helped to train our own HVAC staff, and verified significant energy savings were being achieved.

I enjoy working with ESC because our interests as owners/operators are always their top consideration, whether they are part of a construction team or working directly on our behalf."

- Peter Morgana, P. Eng. LEED AP,
Manager of Maintenance at BCIT

To find out about Delta Controls
Contact us now on **1-604-574-9444**
Alternatively visit our website at **www.deltacontrols.com**

Delta™ CONTROLS

Mohawk College

Hamilton, ON Canada

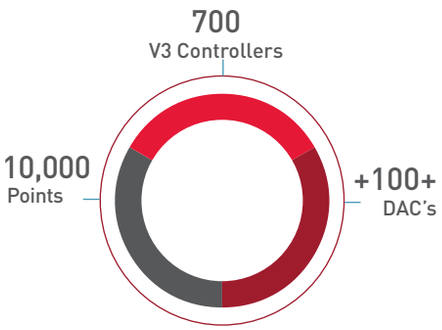
Overview

Vertical	Project Type	Site size
Education	Retrofit	1,000,000 ft^2

Built in 1967, the Mohawk College of Applied Arts and Technology is located in the Golden Horseshoe of Ontario. From its inception, the college took energy management seriously and recently launched an "Environmental Management Plan". As part of the Fennell Site Renewal Project, Delta Controls Toronto took part in leading two LEED ® Gold building installations.

Overview

As of 2014, Mohawk College has more than 1,000 faculty instructors, roughly 12,500 full-time students, 4,000 apprentices, 46,000 continuing education registrants and 1,200 international students studying in more than 100 post-secondary and apprenticeship programs.







The Challenge

The retrofit of the college, integrating 10 different supplier products, had to be completed in a tight summer schedule, prior to the start of the semester.

Delta Controls Toronto was responsible for integrating over 10 different third party suppliers and building systems ranging from lighting to VFD drives and chillers using BACnet and protocol conversion gateways. Due to time constraints on the project, installation had to be coordinated with various sub trades and construction disciplines while making sure the project would be completed on time.

The buildings had to be constructed to LEED® Gold standards.

Delta Controls Toronto was happy to assist Mohawk College in achieving their environmental plan. The buildings would have green roofs, solar panels, in-floor radiant heating, daylight and occupancy sensors, low flush toilets, LED lights, and a living green wall installed. The controls system also contributes LEED points to the project.

To find out how Delta overcame this challenge, please turn over. ⟶

Delta™ CONTROLS

Mohawk College

Hamilton, ON Canada



The Solution

Delta Controls Toronto was able to replace pneumatic and legacy third party DDC controls with Delta V3 controllers. The new generation products are far more efficient and responsive.

Along with consolidating and optimizing many different mechanical systems, Delta Controls was also able to integrate lighting and other third party systems under one dynamic user interface.

ORCAweb	DSC Series	DAC Series	DVC Series
Web- based BAS management software	Scalable, programmable controllers	Ethernet enabled, high-speed system controller	Fully programmable VAV controller

The Benefits

As the building systems were optimized, building managers had fewer climate comfort issues and enjoyed improved equipment performance.

The existing building controls were enhanced and integrated with each other. Coupled with the faster communication speeds, this made system diagnostics more effective, saving the facilities team time. The ORCAweb software allowed the BAS to be centrally controlled through a single interface for easier building management.

The Results

An easy-to-use, integrated building system network was created.

A fragmented system of various BAS vendors was replaced, upgraded, and a new network was put in place. This created a large, seamless, unified building system network that allowed the building managers at Mohawk College to manage and control their facilities more effectively and contribute to their environmental management plan.

To find out about Delta Controls Toronto

Contact us now at **1-800-510-6285**
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CASE STUDY • Delta Controls + El Paso Water Utilities

El Paso Water Utilities, Administrative Headquarters

Delta Controls PDS: Supporting New Partners from Day One

Introduction

When a new controls partner needed help fast, Delta Controls' Professional Development Services (PDS) team stepped in with full-service support. The El Paso Water Utilities (EPWU) administrative building project is a new construction effort led by Trane, a mechanical systems provider and newly onboarded Delta Controls partner

With limited prior experience working with Delta products, Trane required comprehensive assistance to meet the demands of a rigorous spec and schedule-driven project. With over 100 VAVs, four AHUs, and complex compliance requirements, Delta Controls' PDS division delivered engineering, programming, graphics, and documentation services—ensuring project success while enabling Trane to self-perform and scale their Delta capabilities.



Partner Enablement and Project Scope

EPWU's new ~29,800 sq. ft. three-story administrative headquarters is part of a broader site development that includes a 28,200 sq. ft. elevated parking deck, a generator pad, and a stormwater detention pond. Originally bid with Trane's proprietary control system, the end user opted late in the process to pursue a Delta Controls-based solution. Trane, as a new Delta partner with limited familiarity, engaged PDS for a turnkey controls implementation.

The scope of controls integration focuses on the administrative office building, where Delta is providing a complete enteliWEB-based building automation solution. (All remaining site infrastructure, including the parking structure, pond, and generator pad is currently outside the scope of controls but was included in the compliance and coordination effort.)

Technical Services Delivered

This project represents a comprehensive engagement from PDS across multiple verticals:

- **Engineering:** PDS developed all controls drawings, submittals, performed specification compliance review, and will support future as-builts.
- **Programming:** Full programming of all equipment, including four AHUs and several hundred VAVs, is being delivered directly by Delta to ensure performance and compliance.
- **Compliance Review:** PDS provided a line-by-line controls compliance analysis as a standalone, billable service to ensure specification adherence.
- **Graphics:** All graphics were developed by PDS to support enteliWEB visualization and operational readiness.
- **Software Features:** Alarm escalation functionality required supplemental enteliWEB modules, provisioned by Delta's software development team.

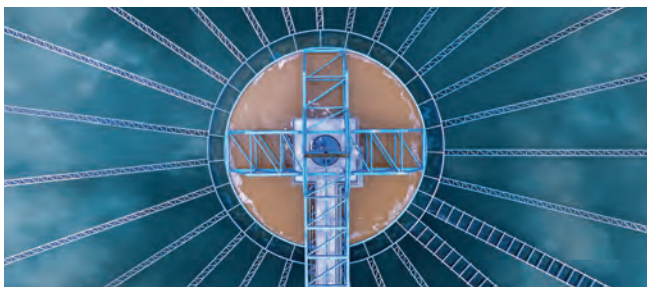
Compliance Review

As an additional part of the Engineering Service, PDS performed a specification compliance review of the controls specification to ensure adherence. This involved line-by-line review of the building management system section of the construction specification, noting each line item as one of: Comply, with deviations, or exception - along with accompanying documentation to support reasoning for any deviations or exceptions. This successfully supported our customer's pursuit to provide a high-quality solution that met or exceeded design intent, while staying within budget using well-matched components with a proven track record of compatible performance with Delta Controls.

Collaboration and Turnover

Though Trane owns the site-wide construction, controls and mechanical scope, Delta PDS has remained directly engaged through each milestone. Initial design meetings were held weekly; and currently, the project is in the programming phase, with touchpoints occurring as needed. Additionally, PDS training was delivered in a limited onboarding format, with the intent that Trane will self-perform commissioning and support.

PDS maintains a 30-day warranty period post-turnover, with a 10-day formal review window for deliverable verification. The structure of the engagement ensures the partner can retain full site control post-handover without ongoing dependence on Delta, but still having support.



Conclusion

The El Paso Water Utilities project stands as a model for how Delta Controls enables new partners through the PDS framework. Delta's focus remains on delivering quality installations, robust engineering support, and scalable partner enablement. Whether Trane continues to self-perform or returns for future services, Delta has laid the foundation for success—with a fully engineered, spec-compliant, and future-ready Delta Controls system.

About PDS

Professional Development Services is a key strategic initiative for the Delta Controls family. Along with the integration tools and platforms, Delta Partners no longer have to say no when a client needs to differentiate themselves. We dare our end users to think differently and not compromise with off-the-shelf solutions.

Work with the experts

The Professional Development Services team is comprised of a diverse group of individuals, each with their own expertise. We have the skills required from graphics design and system integration to low level programming. Each Engineering Service Specialist has direct access to the designers and developers within Delta – enabling them to go right to the source of the system.

Leverage our experience

Since its inception, PDS has worked with the Delta partnership to complete many projects, large and small. Whether you are looking for some assistance with a new product you have not used before, or just need a hand getting some last minute work completed on schedule, Professional Development Services is the solution.

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CASE STUDY • Delta Controls + Hyatt Hotels

Hyatt Graphics Legacy Interface Reimagined

How Partners can leverage PDS for legacy graphics modernization

Project Background

Power Engineering Solutions (PES), a trusted Delta Controls Partner, was asked to modernize the graphics interface for a Hyatt hotel operating on Delta's legacy graphics platform. Rather than take on the technical lift in-house, PES turned to Delta Controls' Professional Development Services (PDS) Graphics Division to execute the upgrade on their behalf.

This approach allowed PES to preserve their direct relationship with the customer while delivering a high-quality result backed by the Delta Controls brand. From the client's perspective, PES provided a seamless, professional experience along with the desired modernized graphics solution.



Objectives

- Replace outdated OrcaView graphics with intuitive enteliVIZ screens.
- Eliminate the need for client-side software by shifting to web-based graphics through enteliWEB.
- Preserve all critical system behaviors, including data points, alarms, and navigation logic.
- Minimize disruption by performing a live, behind-the-scenes transition.
- Maintain partner visibility by enabling PES to remain the primary point of contact.

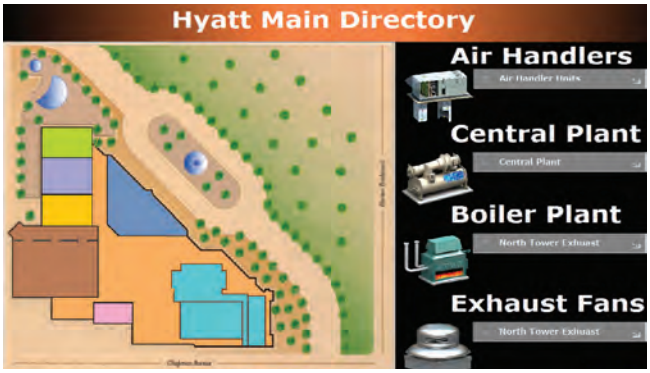
Execution Strategy

Delta PDS handled the technical piece of the project from start to finish using secure remote access and the site's original project files to rebuild all graphics in enteliVIZ. The PDS team leveraged its vast and vetted internal graphic template library to efficiently replicate the functionality of the original system while improving visual clarity and responsiveness.

All design, testing, and validation were completed without disrupting hotel operations. This remote workflow ensured both speed and system stability, delivering a polished result without burdening the partner or the client.

Graphics Before

Graphics After



Home Page ORCAview



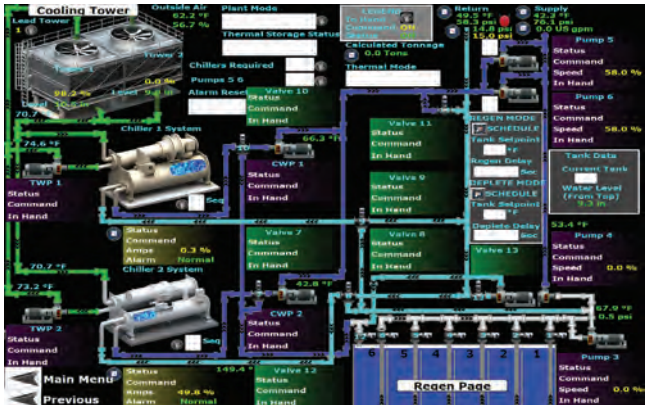
Home Page enteliVIZ



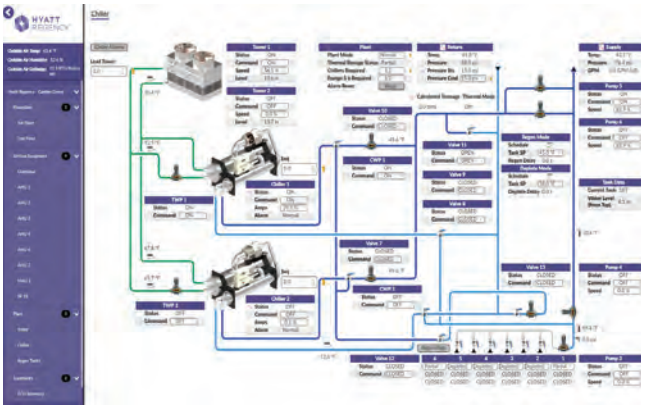
Floor Plan 1 ORCAview



Floor Plan 1 enteliVIEW



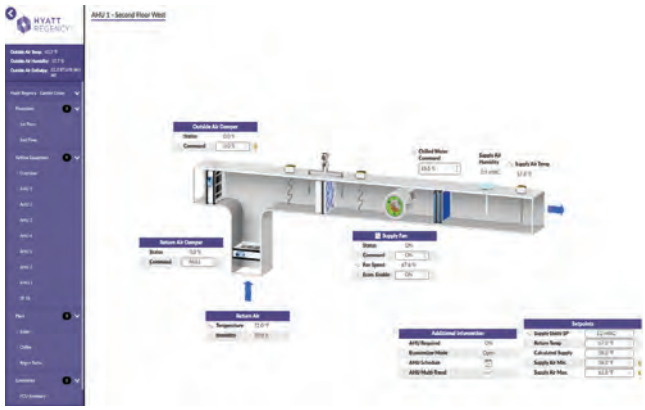
Chiller Plant ORCAview



Chiller Plant enteliVIEW



Air Handeling Unit ORCAview



Air Handeling Unit enteliVIZ

Results

- Partner Enablement: PES delivered a high-value service without needing to build their own internal graphics team.
- Modern Interface: Enhanced navigation and operator experience through clean, responsive enteliVIZ graphics.
- Zero Downtime: Entire upgrade performed with no impact to hotel operations.
- Efficient Turnaround: Completed in approximately 70 hours over a four-week timeline.
- Portfolio Expansion: Success led to repeat engagements across additional Hyatt locations.

Deliverables

- Redesigned enteliVIZ graphics for AHUs, VAVs, FCUs, and system navigation.
- Branded layouts and screens tailored to Hyatt property aesthetic.
- Post-deployment support for minor adjustments and punch list item.

Conclusion

This project highlights how Delta Controls PDS empowers partners to deliver sophisticated modernization projects without increasing internal workload. Through refined workflows, prebuilt templates, and remote execution, PDS enables seamless graphics upgrades that preserve system integrity and improve the user experience.

For partners like PES, it's a scalable model. For clients like Hyatt, it's a frictionless path to system modernization.



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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.

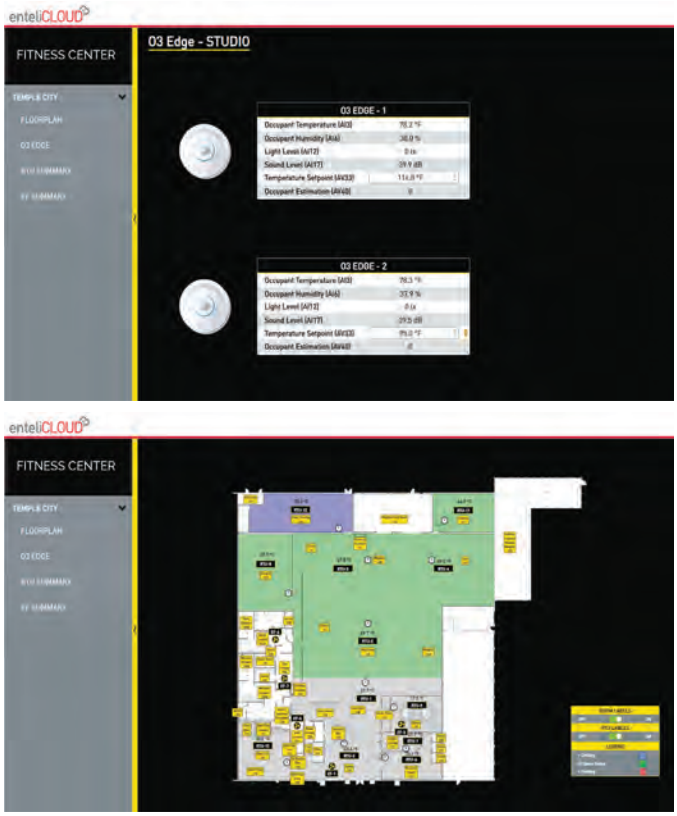


Fig 1.1 and 1.2: enteliCLOUD screen capture from real time monitoring of yoga studio and entire fitness complex.

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.

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.

deltacontrols.com

Canada Centre
for Inland Waters

Toronto, ON
Canada

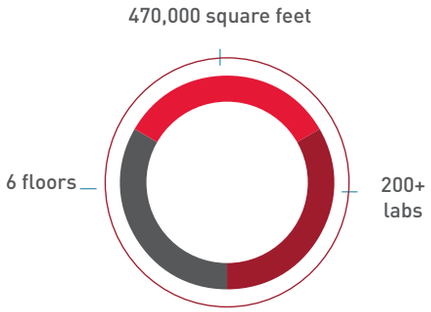
Overview

Vertical	Project Type	Site size
Government	Retrofit	470, 000 ft²

Located in Burlington Ontario, the Canada Centre for Inland Waters (CCIW) is Environment Canada's largest freshwater research facility. Consisting of 200+ laboratories and 700 occupants, CCIW is a base for Environment Canada's National Water Research Institute (NWRI), Global Environment Monitoring Systems (GEMS), and Fisheries and Oceans Canada.

Overview

This legacy upgrade allowed CCIW to lower operational costs and create energy savings.







The Challenge

Updating a control system whilst maintaining the appropriate laboratory environment was crucial to the success of the job.

Delta Controls Toronto has been servicing CCIW for over 20 years. When the time came to upgrade the facilities HVAC BAS controllers, Delta Controls Toronto was the obvious choice for the job. Maintaining the correct environment for the laboratories was crucial during implementation to protect the experiments which are done in the facility. Each part of the legacy conversion from Version 2 to Version 3 would require careful planning and consultation with the facility to keep it operating productively.

To find out how Delta overcame this challenge, please turn over. ⟶

Delta™ CONTROLS

Canada Centre for Inland Waters

Toronto, ON Canada



The Solution

The enhanced BAS system consisted of a retrofit of all existing V2 Intelli-Con products to Delta Controls' latest V3 DDC panels. To minimize capital costs and limit construction disruptions to the laboratory occupants, the electrical installation was completed by both Delta Controls Toronto and the facility's internal team.

25 DSC Controllers	1 DFM 400P	19 DAC Controllers	124 DVC Controllers
Fully programmable BACnet controller	Pluse input expander board	Fully programmable application controller	Application controller that communicates via MSTP/BACnet protocol

The Benefits

Delta Controls Toronto was able to put CCIW completely on the V3 platform which allowed the site to upgrade to Delta Controls ORCAweb. Operator access to the BAS was improved and became a unified procedure by utilizing the Delta's web enabled software. This made building management easier for the staff at CCIW.

By maintaining strict timelines, and appropriate scheduling with CCIW personnel, the building automation system upgrade was a seamless process. This allowed the retrofit to proceed on time with minimal interruption to the facility.

The Results

The building controls were enhanced and integrated with each other for better building control. Coupled with the faster communication speeds, increased memory and trending capabilities of the V3 product line, the integration allowed CCIW to pro-actively manage their facility.

To find out about Delta Controls Toronto:

Contact us now at **1-800-510-6285**
Alternatively email us at **deltasalestor@deltacontrols.com**

A Grenville & William Davis Provincial Courthouse

Toronto, ON

Canada

Ontario
Infrastructure Ontario

Overview

Built in 2000 in order to combine a number of smaller Peel regional courthouses, the A. Grenville and William Davis Provincial Courthouse is a state of the art facility that continues to grow.

- **2000** Initial Construction
- **2010** BMS retrofit reviews between Delta Toronto and the building operators.
- **2011-12** Delta Toronto BMS upgrade of all VAVs and mechanical rooms
- **2013** Delta Toronto BMS integration of security, lighting and energy monitoring systems.
- **2015-16** Upcoming expansion of 8 new courthouses and BMS retrofit of an adjacent building into the main courthouse BMS.



Overview

Vertical	Project Type	Site size
Government	New / Retrofit	50 courts; 40 cells

The A. Grenville and William Davis Provincial Courthouse was first built in 2000. This new building combined a number of different, smaller Peel regional courthouses into a new state of the art courthouse. Delta Controls Toronto has been involved with the courthouse since it first opened its doors and has continued to be involved through two different Building Management System (BMS) upgrade projects in 2012 and 2013, and will be part of an upcoming expansion of 8 additional courthouses in 2015-2016.



The Challenge

The justice system doesn't stop for renovations.

A courthouse is the epitome of security and a retrofit of this building's BMS had to be scheduled and coordinated nearly down to the minute. The need to maintain the construction schedule was paramount. Any system to be installed needed to be fast to install and reliable enough so that once commissioned, areas could be turned back over to the courts with confidence that they would work the first time.

Expansion of the courthouse's system was inevitable; their BMS needed to accommodate the region's long term goals.

With the Peel region's population growing, the courthouse's BMS needed to be able to grow as well. Future-proofing the installation meant finding a product that could grow with them without having to replace their entire system or being locked into a single vendor with potentially outdated technology.

When dealing with taxpayer money, efficiency is of the utmost importance.

As the building's BMS was being revised and renovated, the building's efficiency and overall energy management needed to be addressed. With disparate systems controlling HVAC, lighting and security, there was only a limited amount of optimization that could be done. In an increasingly energy conscious world, the status quo wouldn't be good enough.

To find out how Delta overcame this challenge, please turn over. →

Delta™ CONTROLS

A Grenville & William Davis Provincial Courthouse

Toronto, ON Canada



The Solution

After deciding to upgrade the existing V2 Delta Control panels in the building, Delta Controls Toronto set out to first upgrade all VAV and system controllers throughout the building. Over 600 different controllers were installed and the courthouse's BMS network was upgraded to an Ethernet backbone to support whatever upgrades were in the building's future.

When the decision was made in 2013 to integrate the other building subsystems into a single front end, Delta Controls Toronto was able to provide the solution. Through the BACnet open protocol, they were able to bring the courthouse's other third-party lighting and energy monitoring systems together with their existing Simplex security system and Delta Controls BMS.

EnteliWEB	DVC-V322AF	DSC-1616E	DSM-RTR
• Online dashboard based BMS software	• Fully programmable VAV controller.	• Ethernet enabled, high-speed system controller	• Ethernet to MS/TP system manager

The Benefits

For 30 years, the reliability of the Delta Controls range of products has been proven time and time again. This reliability and ease of installation, ensured that Delta Controls Toronto was able to meet all the deadlines and schedule obligations.

At the end of the courthouse's integration in 2013, the A. Grenville and William Davis Provincial Courthouse was had a completely integrated BMS and could take advantage of the optimization and interoperability now available. By combining the lighting, security and HVAC systems, actions previously only used by one system, such as unlocking a door with a key card, can be used to turn on and off lights and switch the HVAC systems from standby to occupied states as needed. This level of control and system optimization was implemented throughout the facility.

The Results

Smart buildings and strong relationships.

Through cooperation and collaboration, Delta Controls Toronto has been able to grow and maintain a strong relationship with the courthouse and its operator, CBRE. By working with CBRE for over a decade, Delta Controls Toronto could better understand their specific needs. The BMS installed at the A. Grenville and William Davis Provincial Courthouse delivered exactly what CBRE and Infrastructure Ontario was looking for; a secure, smart, efficient building that meets the needs of everyone at the courthouse.

Integration is everything.

If you can't control a building holistically, there will always be avenues for optimization that are not available. Seeing an entire building as a whole, building up interoperable control strategies and being able to leverage data across different systems is how Delta Controls can achieve the highest levels of building energy efficiency.

To find out about how Delta Controls Toronto can help,
contact us now at **1-800-510-6285.**
Alternatively you can email **deltasalestor@deltacontrols.com**

Delta™ CONTROLS

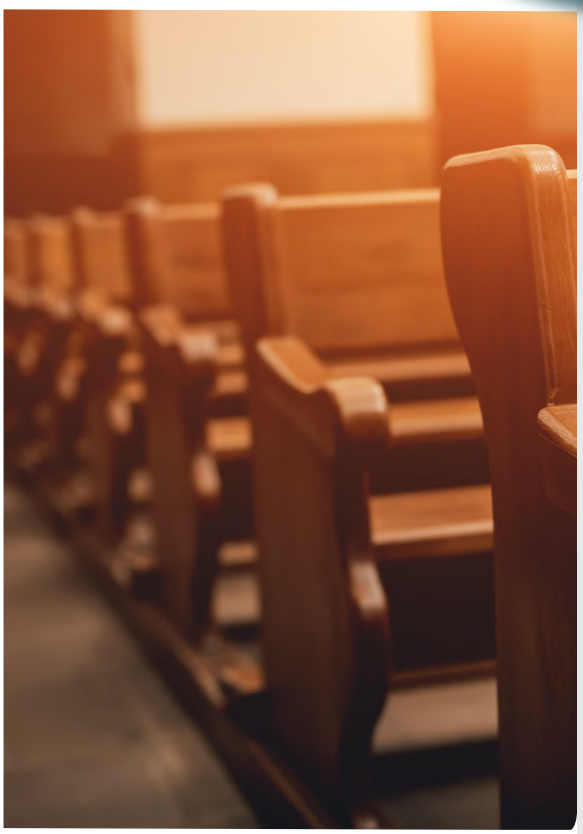
O3 Sense
Enhancing the User Experience

BACKGROUND

Founders of a large church in south Florida wanted to ensure they were putting the comfort, health and wellbeing of their members and staff, first. With an existing Building Management System monitoring and controlling various sections of the facility, they wanted to integrate emerging technology to improve their occupant's experience.

CASE STUDY





THE CHALLENGE

In the large open area of the sanctuary, 17 air conditioning units have dedicated zone of control. Some of these units have traditional wall thermostats and the others are using return air sensors at the unit for temperature control. The challenge is the traditional wall thermostats are too far away from the controlled zone, and there was zone overlap from the area the stat was located. This resulted in the units using too much energy to get to the desired temperature. This was effectively overcooling the space to get the return temperature to the user's desired value.

Sound level in certain areas of the sanctuary were not adequate. Members of the church had challenges hearing worship in certain areas when social distanced because of the COVID-19 pandemic.

The facility staff did not have a way to accurately measure sound in various areas.

Installing three of the O3 Sense in the open area of the sanctuary provided the optimal vantage point for more accurate sensing and control of the environment.



▶ **Delta Controls Finds The way to "Do it Right"**

Find out how Delta Controls was able to overcome this challenge.





THE SOLUTION

Installing three of the O3 Sense units in the open area of the sanctuary provided the optimal vantage point for more accurate sensing and control of the environment. Air conditioning units in this area were using return air temperature as their process variable, so the three occupant temperatures from the O3 Sense were shared with all the units controlling that area.

O3 Sense were installed over two balcony areas to overcome an overlap in control zones in both the balcony and the lower bowl. The existing air conditioning units had tradition temperature sensors on the wall but located extremely far away from the area they are responsible for controlling.

Every O3 Sense is monitoring the sound decibel level in each of the five areas simultaneously. The facility staff is able to accurately see in real time the effects of certain sound equipment in the space and will be able to make better decisions on where sound upgrades will be needed.

THE BENEFITS

After installing the Delta Controls O3 Sense, controlling and maintaining optimal temperature in the sanctuary enhanced occupant comfort and delivered energy savings.

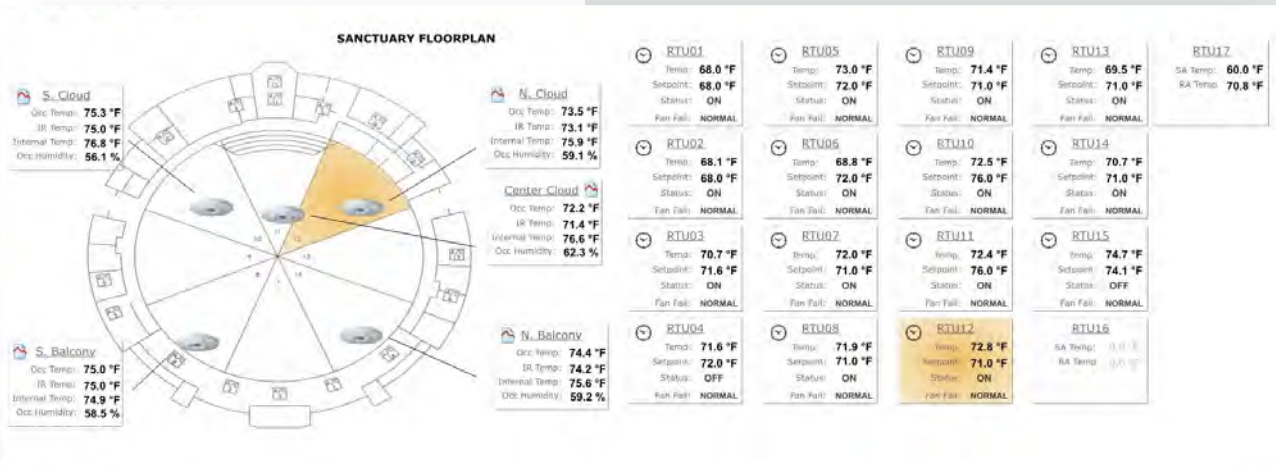
- With more accurate temperature sensing and a better vantage point of the area under control, occupant comfort in the space has improved dramatically. There are no longer cold spots and all the units in the zone are able to run and a single unique setpoint.
- The user is now able to use the on-board occupancy sensor on the O3 Sense to put the units in temperature setup and trust when the area isn't occupied that the temperature can still be maintained. This allowed an energy savings of 15% kWh in the sanctuary area.
- The O3 wireless configuration allowed devices to be set up ahead of time for ease of commissioning on site via the mobile app with minimal disruption. As the O3 uses open protocols and is BACnet native, it seamlessly integrated into the existing BMS.
- Being able to accurately measure sound levels in the entire space allowed the facility staff to only add sound equipment in the certain areas that were lacking sound distribution. Originally, the facility was upgrading far more equipment than they needed.

THE RESULTS

All five O3 Sense were installed on the existing BACnet IP daisy chain of the BMS system. The installer used the O3 Setup App from the Apple App store and configured the O3 Sense for BACnet IP and DHCP from the BMS IP controller.

15% kWh
Energy saving in the sanctuary area.

Protocol/BACnet
Integrated into the existing BMS



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