

CASE STUDY

Delta Controls + LOYTEC at Arches Primary Care Centre

Improving Energy Performance Through Intelligent Lighting Modernization with Daliz

Location: Belfast, Northern Ireland
Vertical Market: Healthcare
Project Type: Retrofit

Introduction

The Arches Primary Care Centre retrofit focused on modernizing aging lighting infrastructure, improving visual comfort, and reducing unnecessary energy consumption within a highly active healthcare environment. As a multi-floor facility supporting continuous daytime clinical operations, the project required a solution capable of delivering measurable efficiency gains without disrupting day-to-day building activity.

The facility was already operating on an existing Delta building management system, making system continuity and integration a central consideration. To avoid introducing a disconnected lighting platform, the retrofit strategy implemented by local partner BAC Ltd, combined LOYTEC DALI-2 lighting controls directly within the Delta BMS framework, ensuring that lighting control, system visibility, and operational management could be maintained through a single, easy-to-access Delta front end.

By combining LED lighting upgrades with a DALI-2 based control system integrated into the existing Delta controls framework, the facility transitioned from a largely static lighting installation to a responsive, sensor-driven environment aligned with real space usage.

The Challenge

Prior to modernization, the building exhibited performance limitations typical of legacy lighting systems. Older fluorescent fixtures contributed to excessive runtime, inconsistent illumination, and declining lighting quality across clinical and administrative spaces. In many areas, lights operated continuously regardless of occupancy patterns, while other zones suffered from reduced brightness and degraded visual comfort.

The operational necessity and layout of the facility added complexity. The Arches Centre needed to remain fully occupied throughout the retrofit, requiring careful coordination around clinical schedules, restricted room access, and multi-floor deployment. In addition, migrating from DALI-1 to DALI-2 controls introduced wiring and infrastructure challenges that had to be addressed without interrupting building operations.

Equally important was the requirement to preserve the building's existing Delta building management system as the centralized control environment. The facility was already satisfied with its building management strategy, making system continuity a priority rather than replacement. BACnet compatibility within the Delta system was therefore critical, allowing the new LOYTEC DALI-2 lighting controls to integrate seamlessly while maintaining a single, centralized interface.

This approach enabled the addition of advanced lighting control and energy optimization capabilities without introducing a separate or competing control platform.

Solutions Implemented

The Arches Primary Care Centre retrofit combined lighting modernization, intelligent controls, and building management integration into a unified system designed to improve both energy performance and occupant conditions.

Lighting Control Architecture

The project deployed a LOYTEC DALI-2 hardware platform to provide distributed, networked lighting control across approximately 1,800 light fittings. The migration to DALI-2 established a modern, interoperable lighting infrastructure capable of supporting advanced sensing, device communication, and adaptive control strategies.

Multi-Sensor Driven Control

DALI-2 multi-sensors and Delta Controls O3 Ceiling Mount Sensors were introduced throughout the facility to provide real-time environmental and occupancy inputs. These sensors supported simultaneous monitoring of occupancy, ambient light levels, and temperature, allowing lighting behavior to respond dynamically to actual space conditions.

Integrated Control & Delta BEMS Integration

The LOYTEC DALI-2 lighting platform was integrated into the facility's existing Delta building energy management system using BACnet. Delta BEMS controllers served as the supervisory layer, enabling the lighting control infrastructure to operate within the broader building management architecture.

Lighting and heating systems were configured to utilize shared sensor inputs, supporting coordinated control behavior across building spaces.



Results and Benefits

The modernization delivered both measurable efficiency improvements and qualitative enhancements to the building environment.

Energy Performance

By combining LED fixture upgrades with occupancy-driven control sequences, the Arches Primary Care Centre achieved an estimated 25 percent reduction in energy costs.

Lighting runtime was aligned more closely with actual space usage, reducing unnecessary operation across clinical and administrative areas.



Lighting & Environmental Quality

The retrofit improved overall lighting consistency and visual comfort throughout the facility. Upgraded light fittings and sensor-driven control behavior provided more stable illumination levels while supporting the functional requirements of a busy healthcare environment. Lux level features were also introduced to help patients with neurodivergences have a more pleasant and caring environment during their visit.

These improvements contributed to a more comfortable interior environment for staff and patients.

Centralized Management & User Interface

With lighting controls incorporated into the Delta BEMS environment, facilities personnel gained centralized visibility into system behavior and control events, simplifying system oversight and ongoing optimization.

Lighting operation shifted toward demand-based automation, with occupancy detection serving as the primary determinant of fixture activity. Manual overrides, including wall controls and IR devices, were retained to preserve staff flexibility and familiar interaction patterns.

Installation & Integration Cost Savings

The retrofit strategy reduced implementation costs by minimizing wiring complexity through multi-sensor consolidation and leveraging the facility's existing BACnet-compatible Delta controls backbone. The LOYTEC DALI-2 lighting platform was integrated without the need for additional supervisory systems or major architectural modifications.

Data Visibility & Energy Insights

The use of Delta Energy Management Dashboards within enteliWEB provided enhanced visibility into lighting energy consumption and system behavior. Facilities teams can observe performance trends, review operational patterns, and support ongoing optimization initiatives using a centralized data environment.



Conclusion

The Arches Primary Care Centre retrofit demonstrates how modern lighting controls can be introduced into an existing building management environment to drive meaningful energy performance improvements without adding unnecessary complexity. By combining the LOYTEC DALI-2 lighting platform with Delta BEMS controllers, the facility established a unified control strategy supported by multi-sensor technology monitoring occupancy, light levels, and temperature.

Integrating lighting directly within the Delta framework allowed the building to extend its control capabilities while preserving a single, centralized interface through enteliWEB.

This approach not only simplified system management and reduced wiring demands, but also enabled lighting operation to align more closely with real space usage, directly supporting the facility's energy reduction objectives.

The project reflects a practical modernization strategy for healthcare facilities, where operational continuity, occupant comfort, and measurable efficiency gains must work together to deliver long-term value.



About Delta Intelligent Building Technologies

At the forefront of building automation systems, Delta IBT 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 IBT 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 IBT is committed to leading building automation into a sustainable future.

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