

CASE STUDY

Saltire Court's Path to Net Zero Carbon via Data-Driven Solutions

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OVERVIEW

This case study investigates the effective strategies deployed by the Chartwell In-Sites Building Performance team at Saltire Court, Edinburgh, collaborating with Savills and ECG. It emphasises the innovative solutions for enhancing the performance of ageing infrastructure, concentrating on optimising HVAC systems, reducing energy consumption, and improving overall operational efficiency through a data-driven approach, utilising building intelligence software and expert interventions.

METHODOLOGICAL APPROACH

Data-Driven Decision Making:

- Leveraging BMS data for refined building control and efficiency improvements.
- Improved automated operations in plant systems for enhanced responsiveness.
- Analysing extensive submetering data for both landlord and tenant facilities.
- Regularly engaging with site management to address energy and occupancy issues and explore new opportunities.

Algorithm-Based Analysis

- Utilising custom algorithms for continuous monitoring and pre-emptive fault detection.

Expert Intervention

- Providing specialist advice for maintenance and regular reporting to stakeholders.

Targeted HVAC Strategies

- Developing tailored operational strategies for boilers, chillers, and ventilation systems to boost efficiency.

AT A GLANCE

Saltire Court, a landmark building in the heart of Edinburgh's city centre, is known for its iconic design and multifunctional capabilities. Despite its high EPC rating of A, the building faces sustainability challenges, aiming to become a Net Zero Carbon Building by 2030. This commitment is set against a complex management scenario involving high-profile tenants, a luxury restaurant, and a theatre.

CHALLENGES

- Supplying constant domestic hot water in a 24/7 operational environment while maintaining compliance.
- Mitigating the consumption impact of COVID-19 specific fresh air requirements.
- Upgrading and maintaining ageing infrastructure with sustainable solutions.
- Identifying the primary contributors to high gas usage.
- Managing the unique architectural feature of a high vaulted glazed ceiling.
- Extended operational hours due to the inclusion of restaurant and theatre spaces.

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INNOVATION





- **Integrated Approach:** Merging maintenance with control-based data analytics for streamlined operations.
- **Real-time Monitoring:** Continuously overseeing HVAC systems for early fault detection.
- **Data Correlation:** Combining operational, occupancy, weather, and energy data for efficient resource allocation.
- **Workflow Coordination:** Aligning stakeholder activities towards common objectives.
- **Audit Trail:** Documenting system changes and assessing their impacts.
- **Mechanical Plant Ratings:** Using ratings to measure optimisation and repair effects.
- **Data-Led Maintenance:** Directing resources based on data insights for precise maintenance.
- **Control-Based Energy Management:** Integrating energy management with system controls for heightened efficiency.
- **Continuous Recommissioning:** Adapting control strategies to environmental changes.
- **Agile Platform Development:** Creating custom algorithms and tools for rapid detection of performance issues and everyday maintenance support.
 - **Communication Strategies:** Issuing monthly reports detailing savings, excess usage, operational trends, and data correlations.
 - **Recommending actionable steps** for mechanical and control contractors.
 - **Assisting building management** in conveying sustainability steps to building owners and occupants.
 - **Beyond Data:** Identifying and addressing leaking heating valves in AHUs serving vacant areas.
 - **Innovating approaches** to minimise domestic hot water impact on gas consumption.
 - **Optimising LTHW and CHW pump operations** based on heating and cooling demands.
- **Accreditation:** Undertaking a preliminary NABERS assessment to establish a baseline for future enhancements.

CONCLUSION


The two-year journey at Saltire Court presented various challenges, mainly due to the fact that the diverse array of tenants meant that the building could not be run like the typical commercial office building, this meant that considerable effort was required by the Chartwell in-Sites team to comprehend and address the site's specific concerns whilst conserving energy and optimising operations. By the second year, we achieved that balance, managing to maintain the demanding comfort requirements while being able to conserve energy.

Looking ahead to year 3, our focus is on further reducing energy consumption, optimising plant operation, supporting building management in attracting new tenants, and advising on renewable alternatives, all in pursuit of the 2030 Net Zero Building goal.

YEAR 1 RESULTS

-  3% Reduction in Electricity
-  1.1% Reduction in Gas
-  59,440kWh Saved
-  8.7 tCO2e Saved

YEAR 2 RESULTS

-  13% Reduction in Electricity
-  9% Reduction in Gas
-  388,000 kWh Saved
-  77.6 tCO2e Saved

OVERALL RESULTS

-  **£118,000**
Total Savings
-  **16 Months**
Payback Achieved



The Chartwell In-Sites team have been integral to implementing a data-driven approach to optimising our HVAC systems, which has yielded year on year efficiency improvements and associated reductions in energy consumption – this approach has proved prescient given the high energy prices experienced in the recent past and insulated the building and tenants from the worst impacts of them.

Our focus now shifts to the challenge of achieving Net Zero Carbon by 2030 – this is complicated by the constraints of the building and services within, and the in-Sites team will have a key role in providing the necessary data and analytics to allow formation of robust NZC plans and demonstrate the efficacy of the solutions post implementation.

The In-Sites team are embedded in all we do here and are key to supporting us to achieve our challenging NZC objectives and we look forward to working within them to deliver these goals.

Gerry Doherty

Senior Facilities Manager – Savills