Reducing costs with Drone Tech

A Case Study: How Drone Technology was utilised at Green Park, Reading to Lower EPC Ratings and Boost Green Credentials

Introduction

An Infrared thermal survey was conducted on the roof and elevations of a pilot site in Green Park, Reading. This survey aimed to provide a thermographic overview of the building's exterior to identify potential inefficiencies impacting energy performance.

Conducted in accordance with industry standards, the survey combined general scanning with targeted imaging to highlight key areas for improvement and support sustainability goals.

Thermography, or thermal imaging, is an advanced technique that captures infrared radiation instead of visible light, providing valuable insights into building performance. Using high-resolution radiometric cameras—both ground-based and UAV-mounted—each thermal image contains over **327,000** data points, offering precise temperature readings across building materials.

Background

The initial proposal required a two-person team to attend the site with a MEWP for a week. The cost included petrol and daily travel time to Reading, but there was no guarantee that the data collected would be accurate or relevant. Additionally, the process involved health and safety risks, as operatives would need to work at height for extended periods. In contrast, it was suggested by CAM that a drone could be deployed to the site for a single day, covering two buildings at just a third of the cost of the manual inspection.

The drone provided high-resolution imagery and precise data on the condition of the glass and gaskets, ensuring accuracy and relevance. Beyond cost savings and efficiency, the use of drone technology significantly reduced the need for working at height, mitigating health and safety risks. Additionally, by eliminating daily travel, the approach contributed to a reduction in carbon emissions, supporting the company's sustainability goals.

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Objectives

This survey was undertaken to provide enough thermographic information to confirm:

- Continuity of insulation
- Avoidance of excessive thermal bridging
- Avoidance of air leakage paths through the fabric (except through intentional openings)
- Moisture ingress on roof coverings
- Areas where efficiency could be improved

Results

The building was heated during the survey, with internal temperature measurements confirming a ≥10°C difference between indoor and outdoor ambient temperatures.

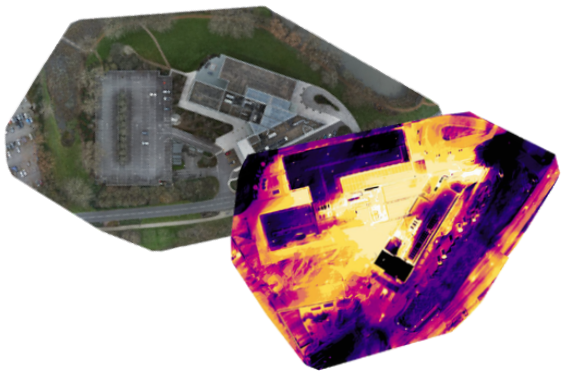

Fig. 1 | Site overview and reflectance map

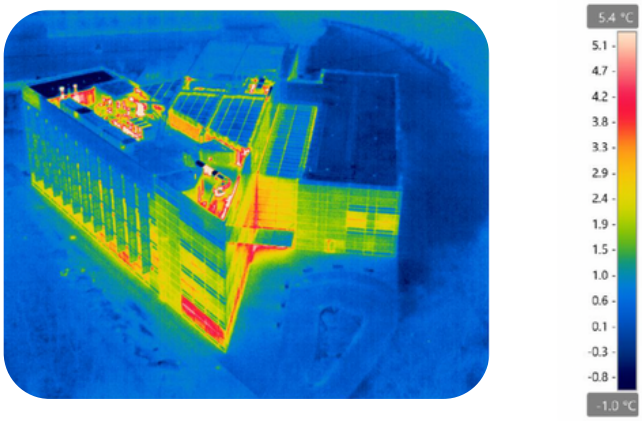

Fig. 2 | Site Thermography output

- **Windows, including both glass and frames, were found to be emitting more heat than adjacent building materials, with evidence of air leakage.**
- **The ground floor showed higher heat emissions than other floors, indicating possible insulation concerns.**
- **The rooftop plant and equipment were found to be radiating significant heat compared to surrounding materials, suggesting potential insulation issues if operating correctly.**
- **Air leakage was observed around entrance areas where glass panels meet at 90-degree angles, with hotspots running along the joints.**

Key outcomes

Cost Savings
The drone inspection was completed at **1/3** of the cost of traditional methods.

Increased Safety
Reduced the need for operatives to work at height, minimising health and safety risks.

Improved Accuracy
Drones provided high-resolution imagery and precise data for more informed decision-making.

Time Efficiency
Completed the survey in a single day, compared to a week with a MEWP team.

> "Using drones for thermal scanning in partnership with CAM Drone Services was a **game-changer**. The technology allowed us to complete the job **faster**, more safely, and at a **lower cost** for the client. The data outputs were fantastic for pinpointing areas to reduce heat loss and running costs. The process was so **seamless** that our client experienced little disruption. A job well done!"
>
> **Simon Durell, LCMB,**

Conclusion

Green Park were provided with a comprehensive output document and provided with solutions to improve the issues highlighted.

As a result of using thermal scanning techniques Green Park saved both time and investment when compared with using traditional surveying methods. By utilising drone technology, the property management company achieved a safer, more cost-effective, and environmentally friendly solution for their building inspection needs. The adoption of this innovative approach not only minimised health and safety risks but also provided accurate and actionable insights at a fraction of the cost of traditional methods. This case study highlights the potential of drones to revolutionise building inspections, making them more efficient, safer, and sustainable.

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