Project Highlight: Oxford Brookes University Energy Analysis

PROJECT NAME

Investment Analysis of Energy Reduction Opportunities across a University Building Estate

CLIENT NAME

Oxford Brookes University

PROJECT TYPE

Energy Audits, Thermal Modelling and Investment Grade Decision Tool

LOCATION

Oxford, UK

MAIN EXECUTING OFFICE

London

START DATE

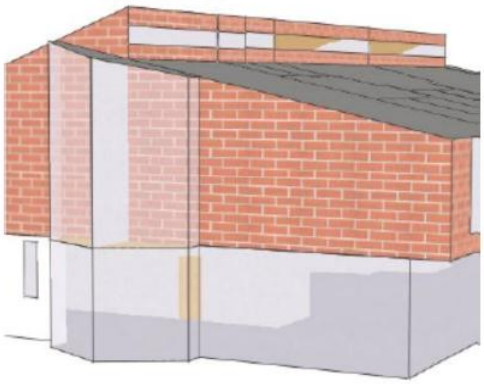
November 2011

END DATE

September 2012

REFEREE

Gavin Hodgson
John Payne Building
Headington Campus (Gipsy Lane)
Oxford
OX3 0BP



Project description

In the context of a long term Estates Strategy, Oxford Brookes University has set an ambitious target to reduce carbon emissions from its building estate by 50% by 2020. The achievement of this strategy requires the identification, quantification and prioritisation of a wide range of energy and carbon reduction opportunities from over 60 buildings across five campuses, covering diverse activities including laboratories, lecture theatres, cafes and accommodation.

With limited available energy data, SKM provided a robust analysis of energy reduction opportunities for each building by constructing a mathematical energy model using IES <Virtual Environment> software. This enabled the baseline annual energy consumption of each building to be established and broken down into end-use such as lighting, heating and equipment loads. Using the standard SBEM profile data, the models were verified by Oxford Brookes against actual energy data and models adjusted by SKM to achieve an accuracy of > 90%. This detailed understanding of the energy requirements of each building provided a robust foundation upon which the impact of specific energy efficiency measures could be based.

This approach is similar to the methodology proposed for the assessment of non-domestic Green Deal funding and established measures that would meet the 'Golden Rule' criteria.

Energy and carbon reduction opportunities were identified through detailed building surveys and their benefits assessed using the building models. This also allowed the impact of multiple options to be more accurately quantified

Individual benefits from all the buildings were then amalgamated into a sophisticated financial tool. This provided the University with an interactive cost benefit analysis resource that prioritises the different opportunities and assists with the business case decisions needed for investment in the University's estate.

The University now know what needs to be done to meet its 50% carbon reduction target.

Client Benefits of this Approach

- ***Investment Grade Decision Making Tool:*** The University has an assessment tool that can incorporate future buildings and changes to the estate as well as model future variations in energy prices and project costs.
- ***Evidence Base without Comprehensive Energy Data:*** The approach enabled a detailed energy breakdown to be established for buildings with limited metering / energy data.
- ***Potential to link with Green Deal:*** The analysis is in line with the Green Deal so measures that meet the 'Golden Rule' criteria can be easily identified.
- ***Building Models Provide Useful Teaching Aid:*** The University has an IES <VE> model for the majority of buildings in its Estate. These are already being used across academic faculties as part of the curriculum.

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