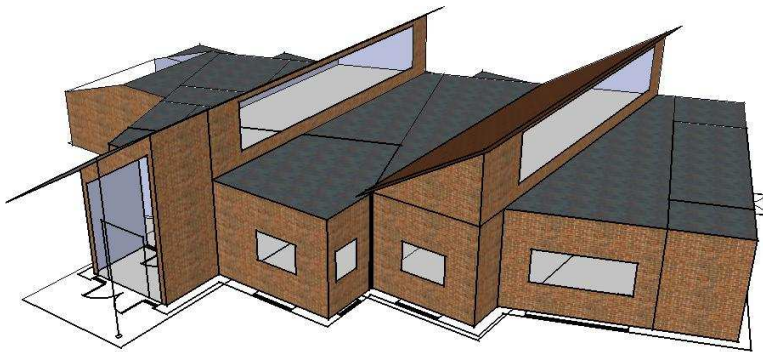


Energy Efficiency & Onsite Renewable Energy Assessment

Managing Risk, Controlling Costs &
Complying with BREEAM Requirement for ENE 5



Client:

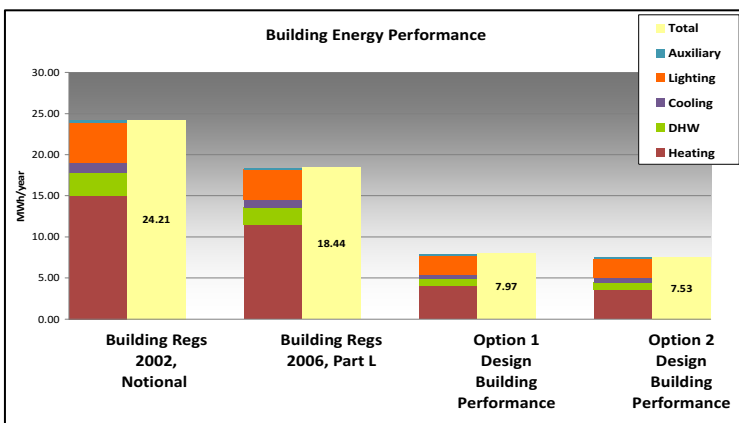
Milton Keynes Council

Completion date:

Ongoing

Project scope:

- IES Dynamic Simulation Modelling (DSM)
- Part L2a & BREEAM Ene 5 compliance
- Building fabric and HVAC design advice
- Overheating and solar shading design advice
- Ventilation strategy and daylight simulation
- LZC technology review and feasibility study
- Lifecycle cost analysis



Project Description:

The National Energy Foundation (NEF) was commissioned by 'Children and Young People's Services' (CYPS) of Milton Keynes Council to provide a study to identify the integration of Low or Zero Carbon (LZC) technologies for Ousedale School EcoLab.

The Ousedale School EcoLab is a 225m² new build facility, and is to be used as an educational demonstration for pupils, assisting them in understanding energy efficiency and integrated renewable technologies in buildings.

The study estimated the carbon emissions and energy consumption of this building from the Dynamic Simulation Modelling (DSM) calculations using accredited DSM software (IES Virtual Environment 6.0.6 (IES)).

Project Outcome:

The study identified and summarised the appropriate LZC technologies, considering which were required to comply with BREEAM — Ene 5 Low or Zero Carbon (LZC) Technologies in the most cost effective way possible.

The project also provided the necessary evidence of compliance with the overheating requirement of Building Bulletin 101 Ventilation of School Buildings (BB 101).

Implementation:

NEF completed the 3D energy model using Sketchup Pro and IES to ensure that all the necessary features of the design were reflected as accurately as possible within the Dynamic Simulation Model.

The LZC calculations followed the guide of the Building Regulations “*LOW OR ZERO CARBON ENERGY SOURCES: STRATEGIC GUIDE, 2006*”.

Project Benefit:

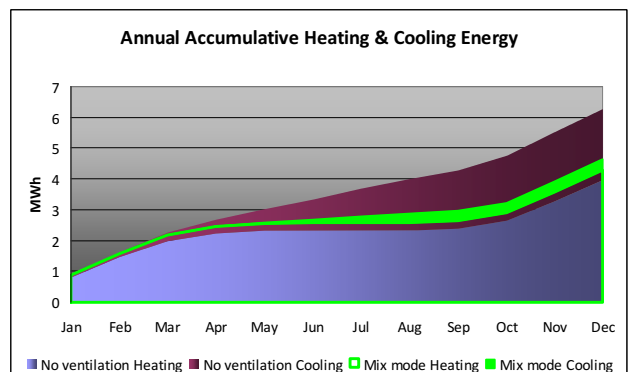
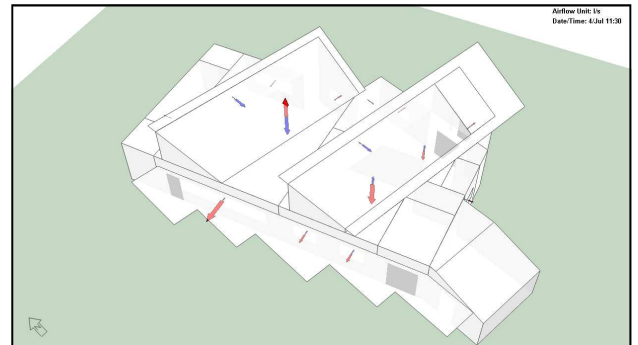
- The simulation looked at two sets of options relating to the building fabric. These options enabled the client to simulate a variety of possible scenarios at the design stage. Detailed HVAC design advice was provided to the client, including the simulation of heating and cooling load variations throughout the year. This virtual model provided the design team with the required confidence, which meant that when choosing and sizing the appropriate systems, the risk of selecting the incorrect system was reduced and costs controlled.
- The overheating and solar shading simulation demonstrated the effectiveness of the solar shading scheme in the project. The design team was provided with the internal temperature performance leading to a more effective design.
- The results of the ventilation strategy simulation showed that the designed system could save up to 50% of the summer cooling load, contributing to a significant carbon saving.
- A comprehensive report was provided covering the potential for renewable energy and investigating the cost implications and payback including the illustration of the various findings outlined above.

NEF’s Added Value:

NEF’s unique position in the energy efficiency and renewables sector, enables us to provide independent and unbiased advice to a variety of different organisations. NEF’s consultants undertake feasibility studies, strategic reviews and provide policy advice to businesses, local authorities and developers. In addition to this consultancy work, NEF is frequently involved in delivering projects through partnerships with other providers. Please visit our website at www.nef.org.uk to find out more.

Renewable technologies considered:

- Solar thermal and photovoltaic panels
- Wind turbines
- Ground source heating and cooling
- Air source heating and cooling



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