Assessment Methodology Building Energy Ratings (AMBER)

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Abstract

The project collected Building Energy Rating (BER), Indoor Environmental Quality (IEQ) and energy sensor data from 100 domestic and 17 non-domestic A-rated buildings. Energy data was paired with post-occupancy research to investigate the difference between estimated energy and actual building energy consumption using IES's suite of intelligent building software. Sensitivity analysis was also carried out to review the Non-Domestic Energy Assessment Procedure (NEAP) and Dwellings Energy Assessment Procedure (DEAP) methodologies and identify key parameters, which impact the performance gap. IEQ data was analysed to understand the impact of the A-rated building on health and well-being of the occupants. Understanding occupants and how to present information with respect to energy and IEQ to enable good behaviour was also researched as part of the project.

Research Outcomes

- Energy and IEQ data analysis of 100 residential and 17 non-residential buildings using IES Digital Twin technology.
- Identification of the reasons for the performance gap with respect to DEAP and NEAP methodologies.
- Dashboards that enable users to take actions to enhance IEQ.
- Innovative method of sensor deployment and data collection.
- Enhanced education of residents of A-Rated homes on how to get the full benefit of their superior asset, avoiding conflicts between energy and IEQ.

Recommendations

- Guidance on how to operate A-rated buildings must be provided to building owners.
- Additional Measurement and Verification (M&V) protocols would also add considerable benefit to ensuring a well-designed building achieving the desired energy performance.
- Perceived comfort should also be considered in the ventilation systems design.
- Expansion of user wellness should be considered as part of the BER methodology.