

SEAI National Energy Research, Development & Demonstration Funding Programme

Authors

Ruth Kerrigan, Integrated Environmental Solutions (IES) R&D Ltd

Project Partners

Roger West, Trinity College Dublin Hugh Brennan, O'Cualann Housing Association

Keywords

Energy and IEQ monitoring, energy performance gap, operation, design and construction compliance, occupancy profiles, best practices, policy recommendations

Contact details

e: ruth.kerrigan@iesve.com www.linkedin.com/in/ruthkerrigan-a97a3114

Disclaimer & Acknowledgment

Responsibility for the information and views presented in this report rest solely with the authors and do not necessarily represent those of the SEAI. Neither the authors nor the SEAI accept any responsibility whatsoever for loss or damage occasioned or claimed to have been occasioned, in part or in full, as a consequence of any person acting, or refraining from acting, as a result of a matter contained in this publication.

This report was prepared by IES, TCD and O'Cualann Housing Association and is based on research carried out from October 2018 to December 2021.

This project has been supported with financial contribution from the Government of Ireland through the Sustainable Energy Authority of Ireland under the SEAI National Energy Research, Development & Demonstration Funding Programme 2018, Grant number 18/RDD/329.

All or part of this publication may be reproduced without further permission, provided the source is acknowledged.

Assessment Methodology Building Energy Ratings (AMBER)

Abstract

The project collected **Buildina** Energy Rating (BER), Indoor Environmental Quality (IEQ) and enerav sensor data from 100 domestic and 17 non-domestic Arated buildings. Energy data was paired with post-occupancy investigate the research to 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 Enerav Assessment Procedure (DEAP) identify methodologies and 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 nonresidential 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 welldesigned 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.





Trinity College Dublin Coláiste na Tríonóide, Baile Átha Cliath The University of Dublin



