



Residential retrofit assessment platform and demonstrations for near zero energy and CO₂ emissions with optimum cost, health, comfort and environmental quality.

Sustainable Places 2018

Cross Collaboration Workshop

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Summary

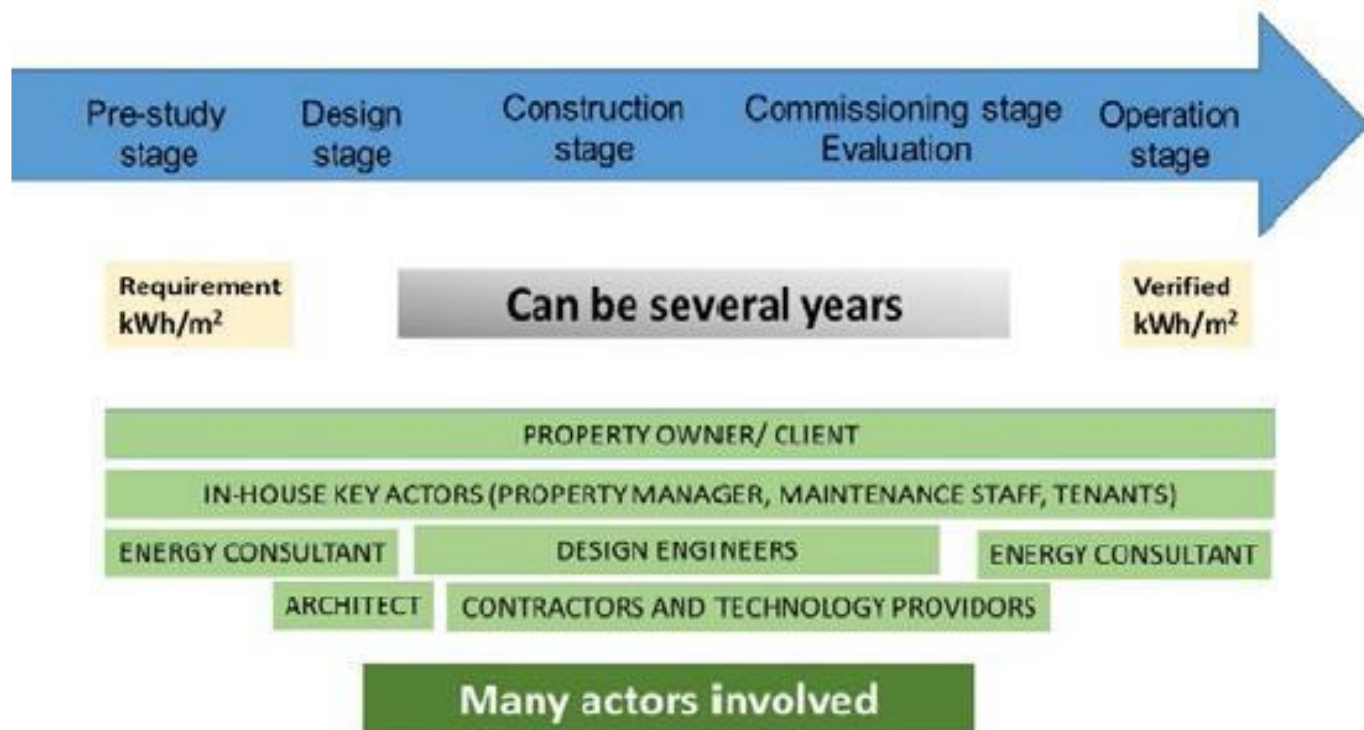
- Budget: €6.9 million
- Duration: 42 months
- Start Date: January 2018

Aalborg University (Denmark)	Greenwatt (Switzerland)
Brunel University (UK)	Quantis Sarl (Switzerland)
University College Cork (Ireland)	Alchemia-Nova (Austria)
Universidad de Cadiz (Spain)	Horn windows (Denmark)
Estia (Switzerland)	Core Innovation & Technology (Greece)
Va-Q-tec (Germany)	Frederikshavn Boliforening (Denmark)
UTRC (Ireland)	Ayuntamiento de Cadiz (Spain)
Acciona Infrastructures (Spain)	Retraites Populaires (Switzerland)
European Cool Roof Council (Belgium)	



Project overview: The problem

- Traditional renovation process is costly & time consuming
- Lack of knowledge & misconceptions regarding effectiveness of solutions leads to lack of action by building owners



Project Objectives



- To develop a comprehensive, accurate and accessible Refurbishment Assessment process
- To design a method for accurate Refurbishment Planning, reducing the time, cost and complexity of the process
- To deploy an integrated Retrofit-Kit that will achieve nZEB refurbishment in a wide variety of refurbishment scenarios and occupant behaviours
- To make nZEB refurbishment accessible through novel customizable and timing-sensitive business models
- To achieve substantial improvements of urban microclimate and overall quality of life



Project overview: Objectives



COST & TIME EFFICIENCY

- Modular Action Plans with adaptable solutions
- Integrated Project Delivery
- Least Cost Approach
- Synergies between technologies



ENERGY EFFICIENCY

- Ultra-Thin Vacuum Insulation
- Compact PV arrays
- Smart Windows
- Cooling Materials
- System monitored & controlled by BEMS



HUMAN HEALTH & COMFORT

- Thermal, acoustic & visual comfort
- Passive on demand ventilation
- Nature based air treatment
- Streamlined and intuitive IEMS optimized for IEQ



ENVIRONMENT

- Urban microclimate improvement
- RES energy generation
- Low CO₂ footprint of solutions
- Decarbonized refurbishment



Key Innovations:



Business/Delivery models & market opportunities

- Modular & adaptable refurbishments to NZEB standard
 - Avoid a fragmented approach to refurb
 - Action planning allows modular approach, ensuring technology measures complement each other and requirements of building owner
 - Least disruption for occupants
- Least cost approach to refurb
 - Life cycle cost considered
 - Look for measures that can enhance proposed refurb
 - Consider when is the right time for intervention
 - Least disruption for occupants



Key Innovations



Building performance optimisation

- Indoor environmental quality improvement
 - Through nature based solutions
 - Through smart window ventilation
 - Reduce levels of pollutants indoors
 - Improve occupant health, comfort & productivity at low cost

Upscaling Energy Management to Blocks of Buildings

- Process is designed for owners of apartment blocks
- Technologies selected are adaptable to different climates & sizes of building
- Refurbishments lead to uplift in building value





Thank you!

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