

King Street Deep Retrofit

TCosy System | EnerPHit Certified | Low Carbon



01953 687332 | beattiepassive.com





Walls	0.11w/m²k
Floor	0.43w/m²k (perimeter U-value)
Roof	0.11w/m²k
Airtightness	0.67ACH@50pa

Project Overview

Location: King Street, Great Yarmouth
Client: **Great Yarmouth Borough Council**
Design Brief: A deep retrofit of a traditional 1950s terraced housing block using the Beattie Passive TCosy Deep Retrofit System. In total, 6 flats were retrofitted to EnerPHit standard (the Passivhaus standard for retrofit). Residents remained in-situ for the full duration of the works.

“I haven’t had to use my heating all year. I even had my energy supplier call me up to enquire why my energy use was so low!”

Peter
King Street Resident



Pre-Retrofit

UK homes are among the least energy-efficient in Europe.

Our Solution

As the name suggests, the Beattie Passive TCosy Deep Retrofit System works much like a tea cosy on a teapot.

It wraps a building with a timber frame structure, creating a continuous void from foundations to roof, which is then injected with insulation to create an airtight envelope, with no thermal bridges.

The TCosy can achieve EnerPHit performance standards.

Post-Retrofit

As you can see, the Beattie Passive TCosy system improved the aesthetic appearance of the building.

The Benefits

- Much lower energy bills
- Dramatically reduced carbon footprint
- Thermal comfort throughout the year
- New look building
- MVHR = healthier homes

Results & Feedback

Fabric performance

Air permeability was 0.67ACH@50pa (an 80% reduction compared to pre-retrofit).

Energy performance

Gas consumption was reduced by up to 85%.

Temperatures were warmer and more stable. Pre-retrofit, the relative humidity was high, with damp and mould prevalent throughout the building. Post-retrofit, relative humidity was significantly reduced, virtually eliminating damp and mould.

CO₂ concentration was dramatically reduced following the commissioning of Mechanical Ventilation with Heat Recovery.

Resident feedback

Residents described their flats as warmer, with better air quality and lower heating bills.

The retrofit was successful in reducing heating energy demand, to the extent that one energy supplier contacted a resident to find out why they had not turned their heating on throughout the winter. Lina, a resident said: "I used to have mould and condensation in my living room, kitchen and bedroom, but now that's all gone. I don't have to use the heating very much now either, and when I do its only for an hour or so."

It was also successful in improving interior comfort. Post retrofit, the flats were warmer with reduced relative humidity and CO₂ levels. Pre-retrofit condensation, damp and mould were all but eliminated.

Unlike many other retrofit solutions, residents remained in-situ for the entire duration of the building works. There was no reduction in interior space and the system enhanced the aesthetic appeal of the building.

Summary

By adopting a 'fabric first' approach, the Beattie Passive TCosy deep retrofit system significantly reduced heating energy demand and improved the indoor environment for the residents, many of whom were vulnerable in terms of fuel poverty. The project exceeded its airtightness target and achieved the EnerPHit retrofit standard.



"I used to get condensation on my windows, so much that I had to use a dehumidifier, but since the retrofit I've been able to put that away as it doesn't happen anymore"

Mrs Mitchell
King Street Resident

01953 687332 | beattiepassive.com

© 2023 E&OE

CS0-10 King Street Case Study_v4

