

Passivhaus projects in the Midlands

the
design büro^{db}

The Design Buro



22 years
and
counting



Specialist
MMC
design



Now we do
Passivhaus!



Meet the team

Jonathan Pitt - Director

Sarah Price

Head of Building Physics



Kevin Antrobus

Revit Coordinator

Alex Baines

Regional Director



Renata Csorik

Architect

Grahame Durrant

Senior Consultant Mechanical Engineer

Steven Coulsting

Architect and Senior Building Physics Consultant



Guy Travis

Senior Consultant Electrical Engineer

Nidhi Shah

Architectural Designer and Building Physics Consultant



Rish Agnihotry

Architect

Nuria Lopez

Building Physics Consultant

56 AND 58 ELLIOTT DRIVE – Completed 2012



Fabric energy efficiency measures

EnerPHit £100k

- External wall insulation (200mm)
- New attic truss roof
- New floor slab
- Triple glazing
- Composite doors
- Air tightness measures were critical to achieve target



Affordable £40k

- External wall insulation (100mm)
- Loft insulated at ceiling level
- No floor insulation
- Existing double glazed windows and doors
- No specific air tightness measures

Building services

EnerPHIT £100k

- Passivhaus certified MVHR
- Gas condensing combi boiler + radiators
- 2.97kWp solar PV tiles
- A-rated appliances
- Low energy light bulbs
- Traditional controls



Affordable £40k

- Single room heat recovery extract fans
- Gas condensing combi boiler + radiators
- Existing appliances
- Low energy light bulbs
- Traditional controls

Passivhaus Vs Affordable Retrofit



Before

Total annual fuel bill = **£1,109**

Carbon emissions = 73 kgCO₂/m²a

Primary energy = 435 kWh/m²a



After

Total annual fuel bill = **£180 (£711)**

Carbon emissions = 11 (48) kgCO₂/m²a

Primary energy = 50 (246) kWh/m²a

COVENTRY ECO HOUSE – Completed Oct 2013



Coventry Ecohouse

2 new homes in Coventry

- Two detached dwellings on an infill site
- Also meet Code for Sustainable Homes Levels 4 & 6
- Social housing for Orbit
- Beattie Passive build system
- Built using locally available materials and local labour
- Encraft carry out regular site inspections to check quality of work
- Cost approx £1,300 per sqm



Beattie Passive Solution

Certificate

Certified Passive House component
For cool temperate climates, valid until 31 December 2013

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
GERMANY

Category: **Thermal bridge free connection**
Manufacturer: **Beattie Passive Build System Limited**
Chedgrave, Norfolk, NR14 6BH, United Kingdom
Product name: **Beattie Passive continually insulated building system**

This certificate was awarded based on the following criteria:

Heat transfer coefficient of building envelope:
 $f \cdot U_{\text{total}} \leq 0.15 \text{ W/(m}^2\text{K)}$
with f : temperature reduction factor

Thermal bridge free design:
 $\Psi_s \leq 0.01 \text{ W/(mK)}$ for key connection details
with Ψ_s : linear heat transfer coefficient
 $U_{\text{standard window, minimal}} \leq 0.85 \text{ W/(m}^2\text{K)}$
with standard window: width 1.23 m; height 1.46 m

Interior surface temperatures above 17 °C
at $\phi_{\text{int}} = -10^\circ\text{C}$ and $\phi_{\text{ext}} = 20^\circ\text{C}$

Airtightness of all components and connection details is provided

Certified connection details as per the certification report are listed below:
(Further information see Appendix 1)

Foundation:
exterior wall: SPHC_08.1

Exterior wall: SPHC_16.1_E, SPHC_16.1_I, SPHC_09.1

Roof: SPHC_12.1, SPHC_15.1, SPHC_13.1, SPHC_26.1

Windows: SPHC_01.1, SPHC_02.1, SPHC_03.1

Partition wall: SPHC_18.1, SPHC_19.1, SPHC_20.1


CERTIFIED COMPONENT
Passive House Institute

www.passivehouse.com 0364ws03



Beattie Passive Solution



Void filled with insulation to wrap around the entire building + external insulation layer

Beattie Passive Solution

- Very little consultancy work for me to do
- Simple to build
- Simple to erect
- Window design change easily incorporated onsite
- Materials are standard, non-specialist and easy to get hold of
- Small site team – 3 people
- Very quiet operations
- Comfortably on programme despite some rainy days

GRANDY'S CROFT - Completed June 2016

6 homes in Solihull

- Social housing for Solihull Community Housing
- Innovate UK funded project with partners Beattie Passive and Coventry University
- MVHR duct work installed within the external wall build up to minimise disruption to tenants
- MVHR units installed inside insulated cupboards with external access for ease of maintenance
- Tenants remain in their homes throughout
- Beattie Passive T-Cosy system is designed to minimise thermal bridging and thermal bypass
- Coventry University monitored building and undertook behaviour change study
- Cost approx £1,000 per sqm

Existing



Nearing completion



SAFFRON ACRES - Completed Jan 2017

68 new homes in Leicester

- All homes are required to be Passivhaus certified as a condition of the planning
- Social housing for emh homes
- Overheating risk has been evaluated in future climate scenarios
- Four different specifications are in use across the site
- Westframe build system design has been evolved from previous site
- Encraft carry out regular site inspections to check quality of work
- Regular air tightness testing by the developer Westleigh Partnerships
- Cost approx £1,400 per sqm



ST JOHN'S ALMSHOUSES - Completed July 2017



18 new homes in Lichfield

- One block of 14 flats and 2 blocks of 2 flats
- Traditional Alms-house, fully serviced independent living units
- Brick and block cavity wall construction
- Externally supported balconies
- Centralised MVHR and gas heating for ease of maintenance in the large block
- Main contractor procurement was a challenge
- Main contractor subsequently went into receivership
- Cost approx. £2,000 per sqm

