

STEEL FARM

Small Projects



LEAP | lovingly engineered architectural process

UK PASSIVHAUS AWARDS 2015

07 July – Residence of the Austrian Ambassador

UK PASSIVHAUS AWARDS 2015
SMALL PROJECTS

Sponsored by:



LEAP

lovingly engineered architectural process

PROJECT OVERVIEW

Steel Farm

LEAP



Northumberland, North East England

Single family house

TFA: 151m²

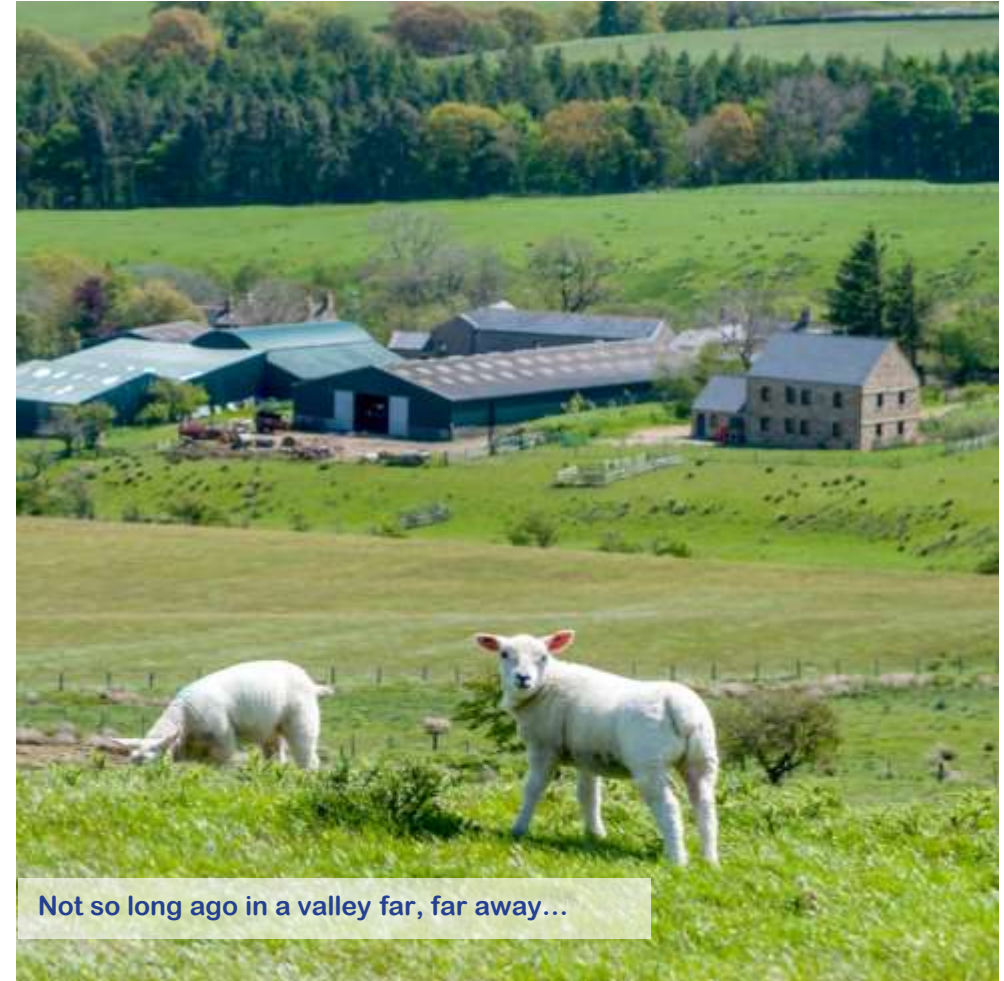
Masonry construction, slate roof

Completion February 2012

Occupied: February 2012

Budget: £1567 (house only)

Client: Trevor and Judith Gospel, Architect & Passivhaus Designer: Mark Siddall, LEAP,
Mech. Services: Alan Clarke, Contractor: J.D. Joinery and Building



Not so long ago in a valley far, far away...

DESIGN PHILOSOPHY

- To transform the quality of Trevor and Judith's life
- To see through their eyes
- To work within a strict budget
- To create a home & farmstead – not a statement

Steel Farm

LEAP



The cold, dark bothy rented by Trevor and Judith



AESTHETICS

Steel Farm

LEAP



Informed by a deep appreciation of Northumberland

UK PASSIVHAUS AWARDS 2015
SMALL PROJECTS

Sponsored by:



LEAP

lovingly engineered architectural process

AESTHETICS

Steel Farm

LEAP



South façade opens towards the sun



Deep reveals provide shading



Windows sized for daylight



Stone hewn from a local quarry



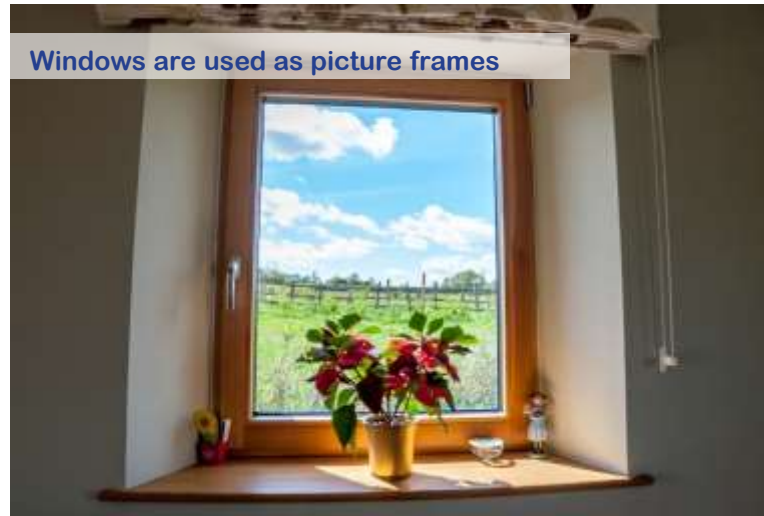
All rooms are washed with daylight



The vista before breakfast



Private office



Windows are used as picture frames

ENERGY PERFORMANCE

PRIMARY ENERGY

85 kWh/m².yr

HEAT DEMAND

14 kWh/m².yr

AIR LEAKAGE

0.32 ACH @50Pa

HEAT LOAD

10 W/m²

Steel Farm

LEAP



"In our old house, 2011 I think, it was warmer in the fridge ...we measured it. More than the savings in energy bills, and more than reducing our environmental impact, we are enjoying the comfort of our new home."

- Judith Gospel, owner/occupier

"The construction of our new home has been a real adventure; challenging at times but, all in all, well worth the wait. Both Mark and Joe have met and exceeded our expectations. We had a limited budget and stuck to it. I don't think that we could have been in safer hands."

- Trevor Gospel, owner/occupier





- 6 cylinders of LPG were used in the 12 months between March 2013 and February 2014 (08.03.13-07.03.14).
- That's 560 litres of LPG per year.
- There were 3649 kWh/yr (24 kWh/m²/yr) of energy used.

**PREDICTED
HEATING DEMAND
28 KWH/M².YR**

**ACTUAL HEATING
DEMAND
24 KWH/M².YR**



CONSTRUCTION APPROACH

Steel Farm

LEAP



UK PASSIVHAUS AWARDS 2015
SMALL PROJECTS

Sponsored by:



LEAP

lovingly engineered architectural process

CONSTRUCTION APPROACH

Steel Farm

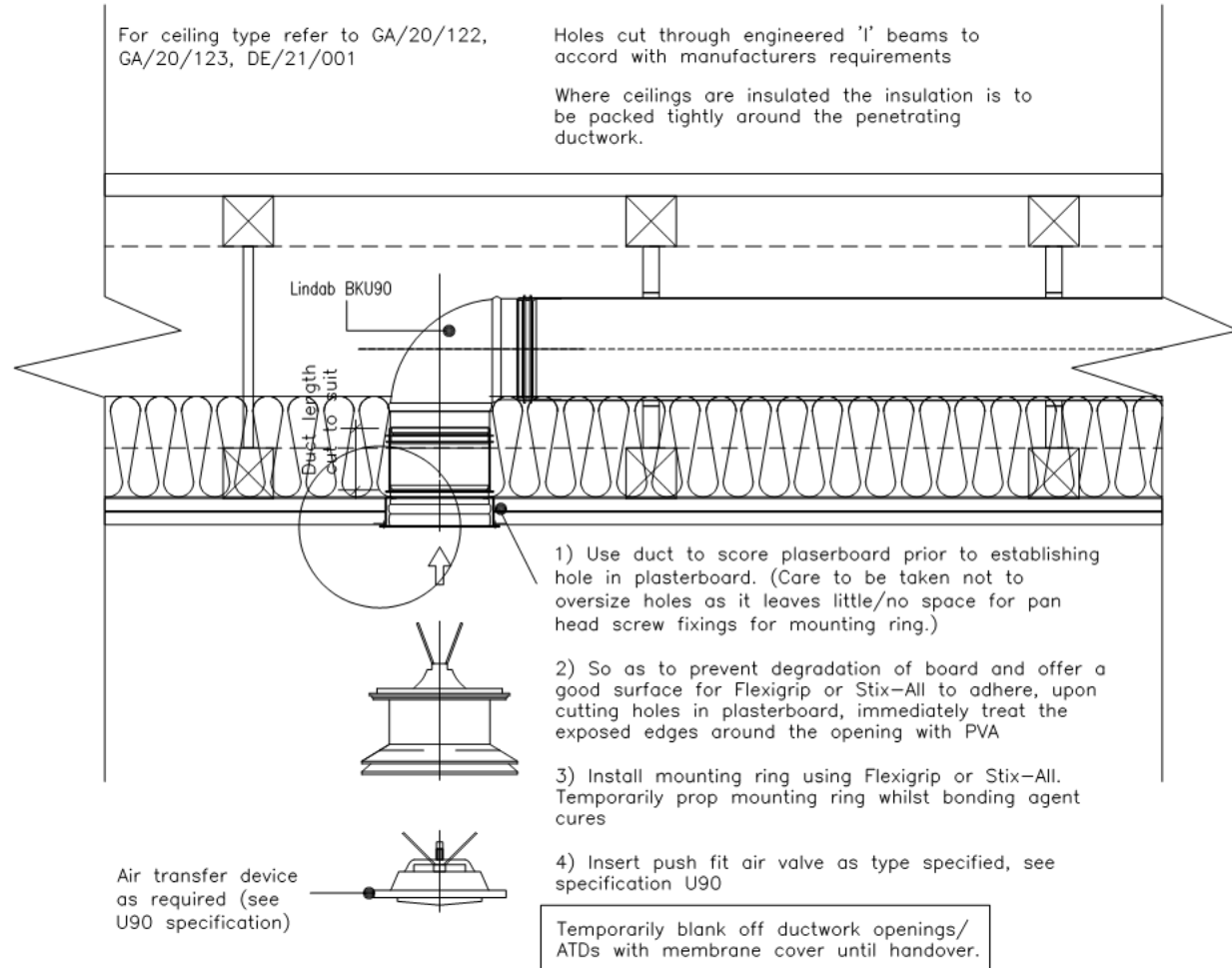
LEAP



For ceiling type refer to GA/20/122, GA/20/123, DE/21/001

Holes cut through engineered 'I' beams to accord with manufacturers requirements

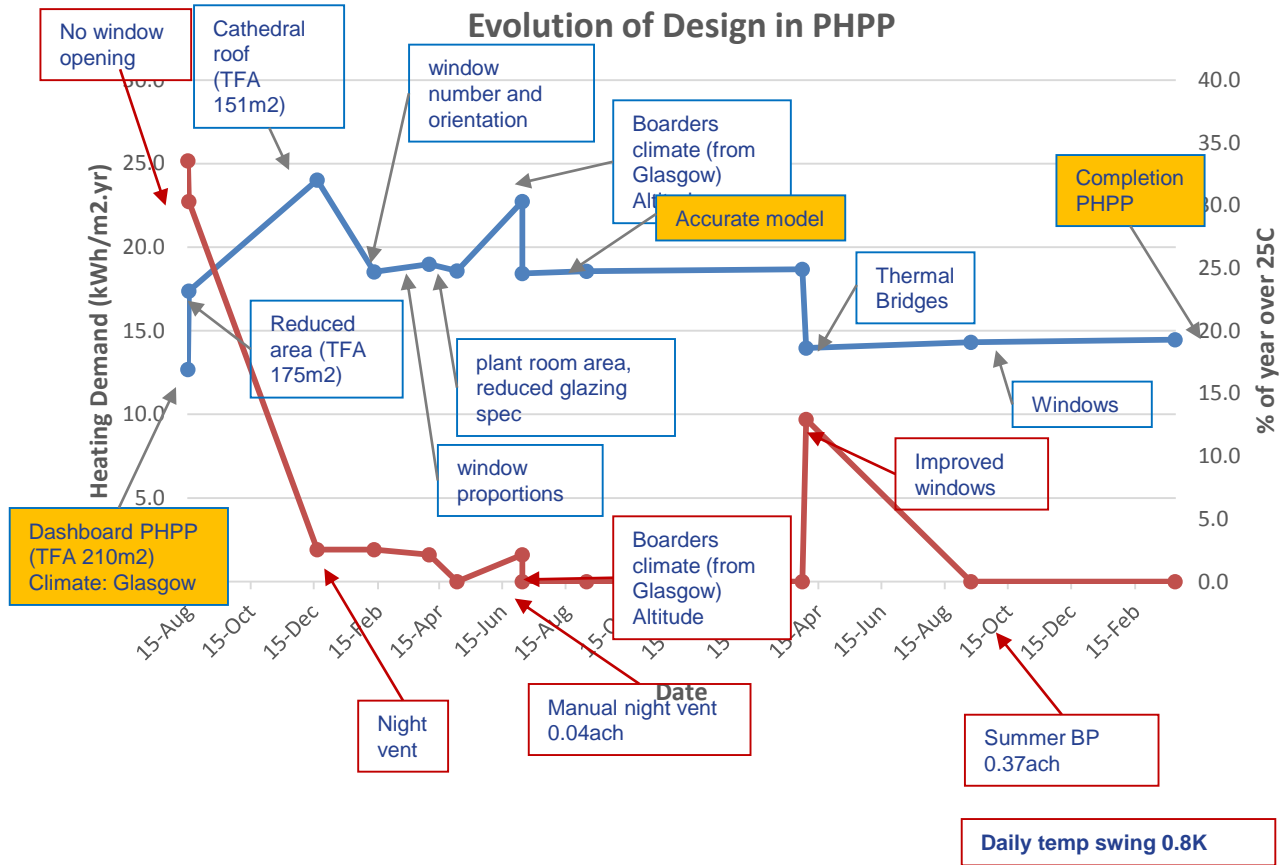
Where ceilings are insulated the insulation is to be packed tightly around the penetrating ductwork.



CLEVER COSTS SAVINGS

Steel Farm

LEAP

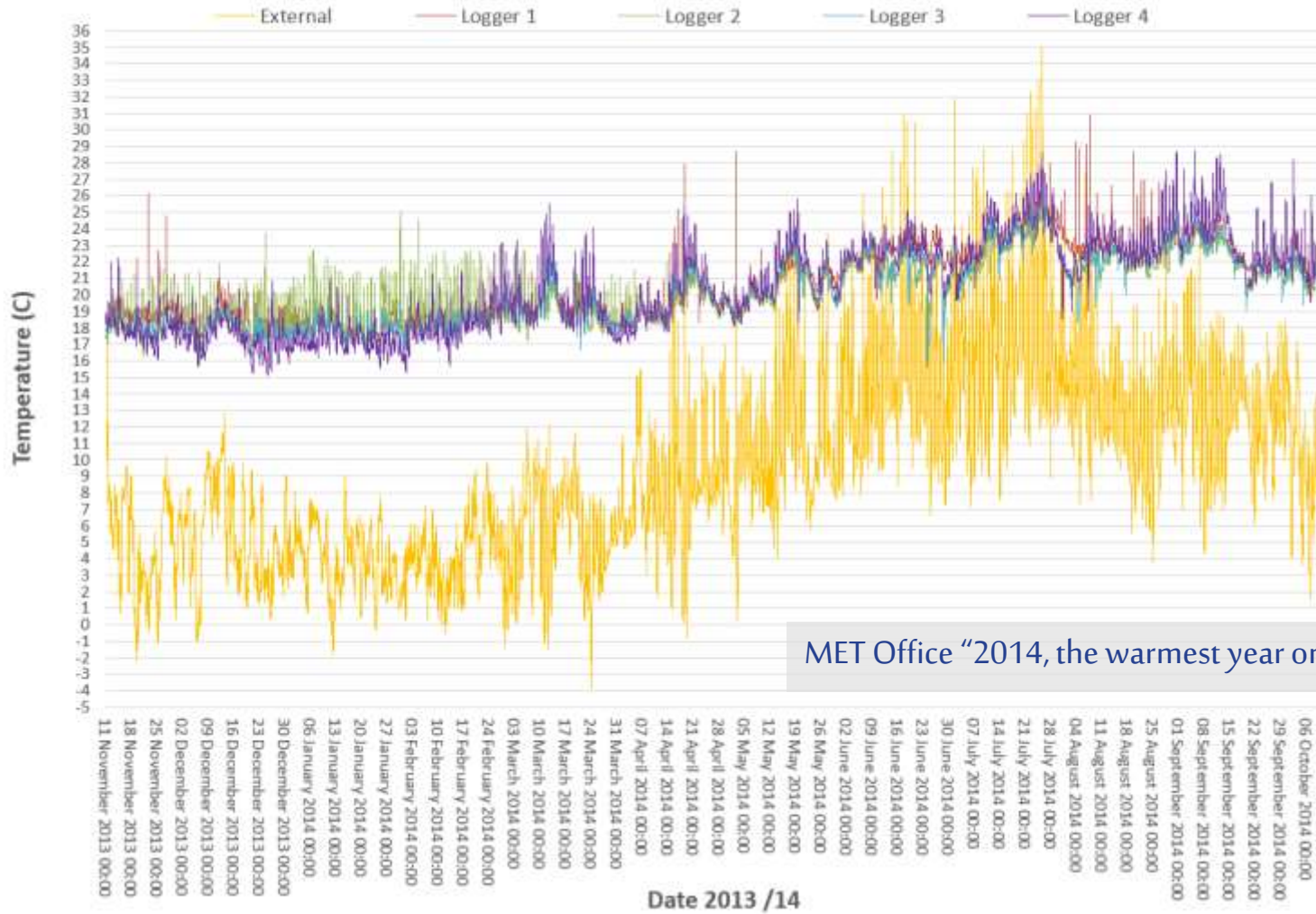


- PHPP dashboard
- Compact form
- Thermal bridge free design
- Keep it simple
- Short pipe/duct runs
- Building Performance Evaluation

Total Costs:
1567 £/sqmTFA



Temperatures



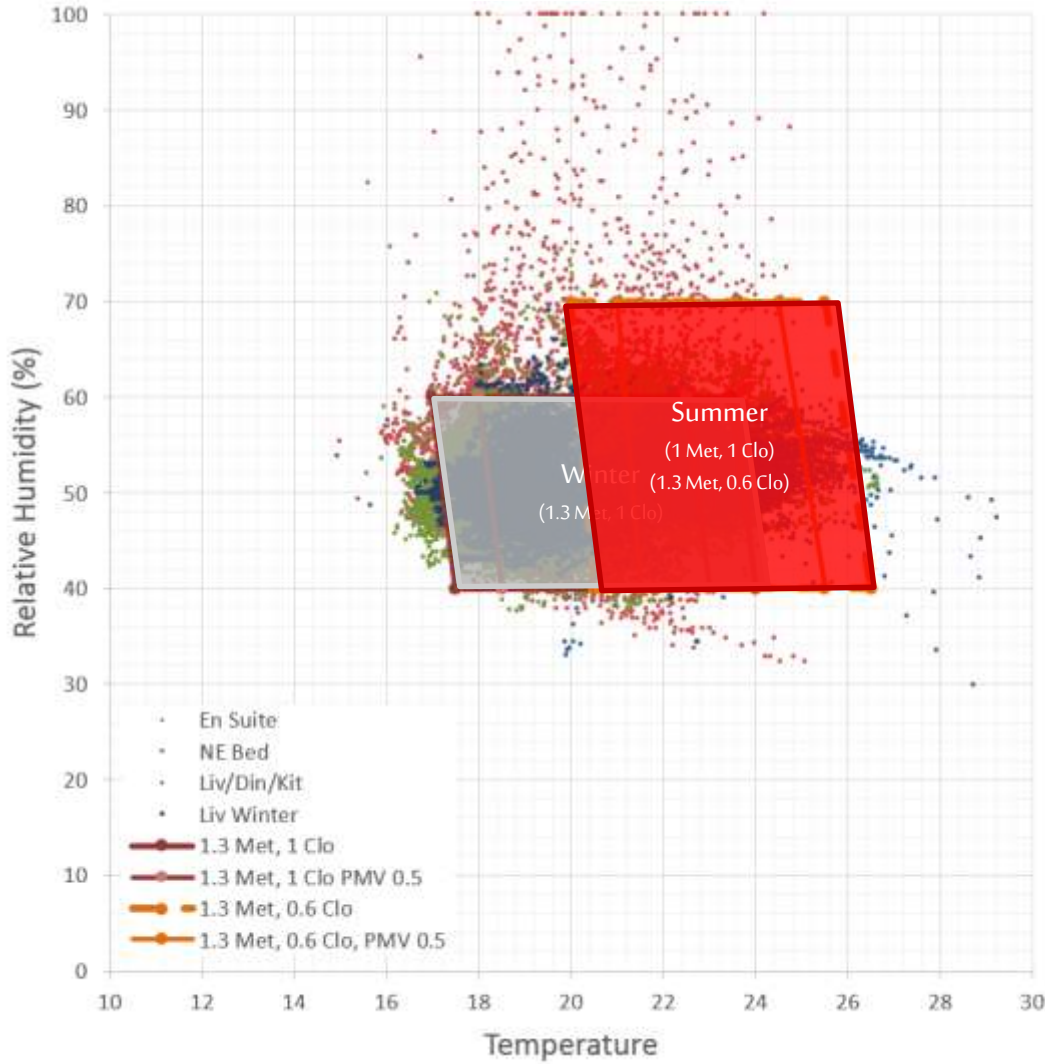
FURTHER INFORMATION

Steel Farm

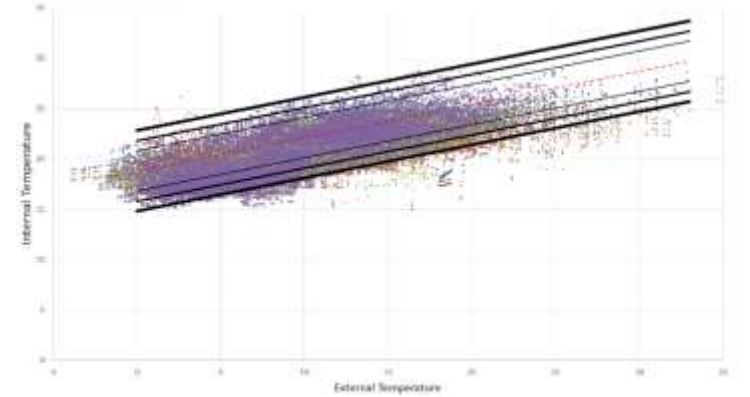


LEAP

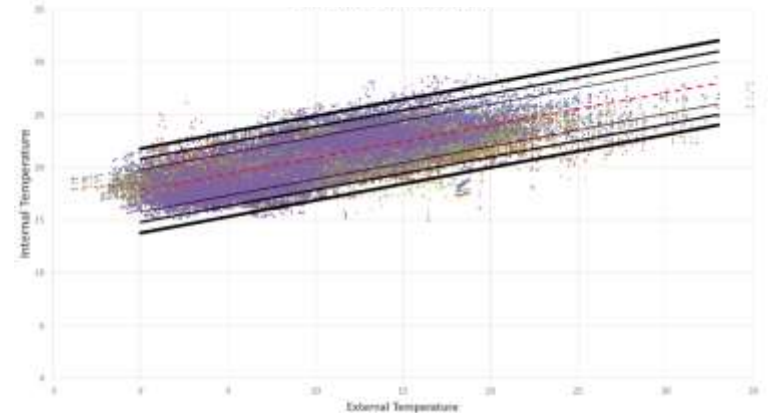
Comfort (BS EN 7730)



Adaptive Comfort (BS EN 15251)



Adaptive Comfort (ASHRAE 55)





www.PassivhausOpenDays.co.uk