Cool Home in a Heat Wave

For Open Eco Homes 2020 / Cambridge Carbon Footprint
17 June 2020

Tom Bragg, CCF Trustee
Margaret Reynolds, Architect, M Reynolds RIBA

tom@openecohomes.org
mrrriba@btinternet.com
http://uk.linkedin.com/in/margaretreynoldsriba
Cool Home in a Heat Wave

1 – Shading & thermal mass - Margaret

Q & A

2 – Ventilation & insulation – Tom

Poll 2

3 - Avoiding accidental overheating - Tom

4 – Personal cooling - Tom
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SHADING - Some BASICS:

1 – Materials absorbing heat/ thermal mass

2 – Seasonal & daily sun on your house
Materials and heat

1 – Dense materials - concrete, brick, stone - absorb more heat & solar radiation, and they release it slowly. = greater “Thermal Mass”

– metals absorb and release heat quickly - conductors

2 – Insulation foam, & timber generally absorb less heat = have less “Thermal Mass”

3 – Glass (even double & triple glazing) transmits heat

4 – Surfaces can reflect heat
Windows & glazed doors
Sunshine & Daylight

1 – To stay cool you need to know which parts of your home receive sun/light and WHEN

2 – North exposure shady, East = morning sun, West = afternoon sun, South, sunny

3 – You also need to know the outdoor temperature, or at least when it is cooler out than in

Source: www.coltinfo.co.uk
Internal Shading

1 – Roller Shades

2 – Blinds: vertical & horizontal

vertical  “closed”  deflecting sun  rooflight
Sun & Horizontal blinds

Blinds “closed”
Summer: sun @ 61 deg
shines in, heats inside surfaces
No view out

Blinds horizontal
Summer: sun @ 61 deg
Some reflected light
View out

Blinds to block sun
Summer: sun @ 61 deg
Sun blocked
Only reflected light
Some view out
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SHADING – Internal & External

VIDEO
External shading – slats & shutters

SOLAR SHADING
Secure shutters and inward opening windows on the south facade provide rapid ventilation and solar shading.

Cambridge, UK \( T: 01223 \) 575 315 \ W www.acarchitects.com
External shading - rooflights

External awning blind transmits 4% - 14% of heat

Fakro, installed 2020: Put in place for summer season

Velux, installed 2010
Solar louvres – Wimbish PH

Wimbish Passiv Haus – porch louvres

Solar louvres for Cambridge

Cambridge max
61.2 deg

Cambridge min
14.4 deg

Spacing

130
30
150

Electronic external blinds

Denby Dale Passiv Haus
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1 – Shading – Summary

- When and where is the sun?
- Internal shading
- External shading
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