

Project name Surya

Project summary Timber framed self-build commenced in 2007, built to a high standard of insulation and airtightness



Project Description

Projected build start date

Projected date of occupation

Project stage Occupied

Project location Diss, Norfolk, England

Energy target AECB Silver

Build type New build

Building sector Private Residential

Property type Detached

Existing external wall construction Softwood frame

Existing external wall additional information 300mm i joists

Existing party wall construction n/a

Floor area 148 m²

Project team

Organisation	Conker Conservation Ltd
Project lead	Paul Mallion
Client	Paul Coster
Architect	New World Timber Frame Ltd
Mechanical & electrical consultant(s)	Rega
Energy consultant(s)	Paul Mallion
Structural engineer	New World Timber Frame
Quantity surveyor	
Other consultant	
Contractor	self build

Design strategies

Planned occupancy

Space heating strategy

Water heating strategy

Fuel strategy

Renewable energy generation strategy

Passive solar strategy

Space cooling strategy

Daylighting strategy

Ventilation strategy

Airtightness strategy

Strategy for minimising thermal bridges

Modelling strategy

Insulation strategy

Other relevant retrofit strategies

Other information (constraints or opportunities influencing project design or outcomes)

Energy use

Fuel use by type (kWh/yr)

Fuel	previous	forecast	measured
Electric			
Gas			
Oil			
LPG			
Wood			

Primary energy requirement & CO2 emissions

	previous	forecast	measured
Annual CO2 emissions (kg CO2/m ² .yr)	-	-	-
Primary energy requirement (kWh/m ² .yr)	-	-	-

Renewable energy (kWh/yr)

Renewables technology	forecast	measured
-		
-		
Energy consumed by generation		

Airtightness (m³/m².hr @ 50 Pascals)

	Date of test	Test result
Pre-development airtightness	-	-
Final airtightness	-	-

Annual space heat demand (kWh/m².yr)

	Pre-development	forecast	measured
Space heat demand	-	-	-

Whole house energy calculation method

Other energy calculation method

Predicted annual heating load

-

Other energy target(s)

Building services

Occupancy	Family house with 4 bedrooms
Space heating	Individual room heaters
Hot water	Direct unvented Heatrae Sadia solar ready cylinder 250 litres, with 2 no immersion elements
Ventilation	Rega 325L MVHR system located in loft, not Appendix Q, 76% efficiency of heat exchanger, electrical efficiency 0.22Wh/m ³ , counter flow exchanger, no frost protection.
Controls	3 speed fan control. Individual thermostats on each heater.
Cooking	Bottled gas LPG
Lighting	Mainly LED lighting
Appliances	
Renewables	16no PV panels 250W each, Rensola 250, 3.6kW, MCS output stated at 2887kWh/a

Strategy for minimising thermal bridges	Simple use of 300mm I joists with slim sole/head plates at junctions.
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Building construction

Storeys	2
Volume	369m ³
Thermal fabric area	431m ²
Roof description	400mm I joists fully filled with cellulose fibre, clad inside with Paneline, and outside with Panelvent
Roof U-value	0.10W/m ² K
Walls description	300mm I joists fully filled with cellulose fibre, Paneline inside with 2 layers of plasterboard, Panelvent outside, with ventilated cavity, woodwool and lime render.
Walls U-value	0.13W/m ² K
Party walls description	not applicable
Party walls U-value	
Floor description	Cassettes made up from 300mm I joists, lined both sides with OSB and fully filled with cellulose fibre insulation.
Floor U-value	0.13W/m ² K
Glazed doors description	Triple glazed Green Building Store timber inward opening
Glazed doors U-value	uninstalled
Opaque doors description	none
Opaque doors U-value	1.29W/m ² K installed
Windows description	Triple glazed Green Building Store timber tilt and turn casements
Windows U-value	1.08W/m ² K installed
Windows energy transmittance (G-value)	0.49%
Windows light transmittance	
Rooflights description	Velux timber double glazed units set on lowest available flashings
Rooflights light transmittance	0.64%
Rooflights U-value	1.30W/m ² K uninstalled

Project images







