

# MULTI-PURPOSE DWELLING

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# SAFFRON WALDEN



## INTRODUCTION

This self-build project, set in the rural countryside of the wider Saffron Walden area, Essex, combines a family home with a specialist glass-blowing workshop. The craft depends on continuous high-temperature furnace operation, driving annual electricity use to around 82,490 kWh – more than twenty times that of a typical UK home.

The need to safeguard the workshop's continuous furnace operation was paramount – and, faced with ever-changing energy costs, the owner contracted Titan Eco to design a system that would generate clean power on-site, offset a meaningful share of the property's unusually high load and provide reliable back-up power.

## OUTCOMES

The 18.90 kWp system generates around 16,638 kWh of clean electricity each year, reducing reliance on the grid and cutting emissions by approximately 4.41 tonnes of CO<sub>2</sub>. With 48 kWh of battery storage, the property also stores daytime generation for evening use and benefits from low-cost off-peak charging, helping to stabilise energy costs across both the home and workshop.

The system's back-up capability – delivered through a dedicated back-up gateway – adds invaluable resilience for equipment that depends on continuous operation. Live monitoring also provides ongoing optimisation, strengthening the property's shift to more efficient energy consumption.

### ANNUAL OUTPUT

 **16,638**

kWh CLEAN ENERGY

### ANNUAL REDUCTION

 **4**

TONNES OF CO<sub>2</sub>

### ANNUAL SAVINGS

 **£6,500**

ELECTRICITY & EXPORT

# SYSTEM COMPONENTS

- ✓ **Solar panels:** 42 × DMEGC 450 W all-black bifacial modules – high-efficiency (up to 22.5 %) N-type cells with a discreet appearance.
- ✓ **Inverter:** 20 kW Sigenergy 3-phase hybrid inverter – delivering robust, intelligent power management, suited to the site's high and varied demand.
- ✓ **Mounting system:** Renusol hook-and-rail system – engineered for durability and a low-profile design.
- ✓ **Battery storage:** 6 × Sigenergy 8 kWh SigenStor modules (48 kWh) – for large-capacity storage and flexible off-peak charging.
- ✓ **Back-up gateway:** Sigenergy C60-2 three-phase gateway – enabling seamless switch-over to back-up and uninterrupted power for the workshop in the event of an outage.
- ✓ **Pigeon-proofing:** Titan Eco's flagship pigeon proofing system, SolaSkirt® – made from black powder-coated aluminium, for longevity and a seamless integration with the array.



# IMPLEMENTATION

- **Assessment & system design:** A survey was carried out, including structural checks and shading analysis. The system layout was then modelled to maximise generation across both buildings, with cable routing and underground trenching planned between the two buildings.
- **Installation:** The Renusol mounting system was fitted to each roof and the 42 panels were installed. Cable trenching was also completed between the workshop and main house using a trencher, spotter and CAT scanner.
- **Pigeon-proofing:** A full perimeter of SolaSkirt® was fitted around the array, providing protection against nesting birds and completing the system with a clean, uniform finish.
- **Commissioning:** The Sigenergy inverter, 48 kWh battery system and dedicated back-up gateway were installed and integrated with the property's three-phase supply. Electrical works were fully tested, commissioned and certified in line with MCS standards, with all regulatory notifications completed.

