

Othona West Dorset – Low Carbon Studio project



Project cost
£33,512

Estimated Savings
15 tonnes of CO₂e* / £3.9K per year

Equipment / Installer
12 kWp Solar PV array - Dorset Energy Solutions,
Air-source heat pump and Mechanical Ventilation
with Heat Recovery (MVHR) - Fowler Carpentry &
Building Services

**Grant
awarded:
£13,404**

**Estimated
Annual Savings:
15 tonnes of
CO₂e* / £3.9K**

The Project

Othona West Dorset is a seaside spiritual retreat which combines the experience of community life with the arts, nature, contemplation and relaxation.

In 2019, the charity built a new multi-purpose studio at their site in Burton Bradstock. In a bid to make their new studio as near to carbon neutral as possible, Othona installed:

- solar PV
- mechanical ventilation with heat recovery (MVHR)
- an air source heat pump

Combined, these measures will save around 15 tonnes of CO₂e and £3.9k in energy costs each year and bring the Othona Community closer to their goal of being carbon-neutral by 2030.

Getting started

Othona West Dorset has been running for over 50 years as a centre for community and spirituality. It is located on the Jurassic coast in seven acres of grounds, managed sustainably to encourage biodiversity and wildlife. The site already benefits from solar PV on several buildings, and the charity has a firm commitment to living sustainably.



*CO₂e, or carbon dioxide equivalent, is a term used to describe different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO₂e signifies the amount of CO₂ which would have the equivalent global warming impact. And allows us to express a carbon footprint consisting of lots of different greenhouse gases as a single number.

In 2018, the charity began plans to build a new multipurpose studio, a year-round resource for Othona's residential visitors and individuals and groups from the local community.

Keen to make the new building as environmentally friendly as possible, Othona reached out to Low Carbon Dorset for advice and financial support. Plans for the build already included several low-carbon measures, including solar PV, an air-source heat pump, and mechanical ventilation with heat recovery (MVHR). However, a site visit by Low Carbon Dorset identified the opportunity to install significantly more solar PV on the new studio's roof space. And we were able

With the help of the Low Carbon Dorset grant it is expected that it will take between five and six years for the panels to pay for themselves, without the grant this payback period would have been just under 10 years.

Mechanical Ventilation with Heat Recovery (MVHR)

In order to increase energy efficiency and reduce heat loss, new buildings are now designed and built with much lower levels of unwanted ventilation. However, having adequate ventilation in a building is important for lots of reasons. So, a mechanical ventilation with heat recovery (MVHR) system was installed to provide the right amount of



Othona reached out to Low Carbon Dorset for advice and financial support

to provide a grant to help cover the costs of Othona's proposed low-carbon measures, their additional solar panels, and an upgrade of their electricity supply.

Solar Panels

A 12kWp solar PV array was included in the build and will generate around 9,413 kWh of electricity a year. It is estimated that Othona will use at least 70% of the energy they generate, this alone will save them around £1K a year in electricity costs. Any electricity they don't use will be exported to the Grid in return for payment from their energy supplier thanks to the Smart Export Guarantee (SEG) scheme. Exporters can currently (May 2021) expect between 2 - 5.6p per kWh.

clean, fresh air into the studio. By recovering the heat from the air it extracts, the MVHR can pre-warm the fresh air it pumps in to the building. This means less energy is needed to heat the building and it can reduce heating costs by around 25%. You can find a great explanation of how MVHR systems work on the [Centre for Sustainable Energy website](#).

Air-source heat pump

In order to reduce their reliance on fossil fuels, Othona decided to install an air-source heat pump (ASHP) to provide the heating for their new studio. And thanks to their MVHR, which reduces the studio's heating demand, they were able to install a smaller air-source heat pump.

By choosing to install an air-source heat pump (ASHP) and MVHR instead of an electric combi-boiler, Othona will save around £2,800 a year in energy costs.

Combined, Othona's mixture of energy efficiency and renewable energy measures will save around 15 tonnes of CO₂e and £3.9K in energy costs every year. It's anticipated that, with the help of the Low Carbon Dorset grant, these measures will pay for themselves in just over five years.

Upgrade to electricity supply

Low Carbon Dorset also supported the upgrade of Othona's electricity supply from single to three phase. This was an essential part of their long-term aim of becoming carbon neutral and was required by Western Power for connecting the Studio's PV to the national grid. It will also enable Othona, among other things, to install electric car charging points in the future.

Other recommended measures:

Several other measures were recommended by Low Carbon Dorset to reduce the carbon footprint of the Othona site. These measures included having a survey of all their existing buildings' roof-space to identify where increased insulation is needed. Insulation can provide excellent low-cost carbon savings and drastically reduce heating bills.

Battery storage was also a possible recommendation for the future. Although battery storage is currently expensive in comparison with the savings offered from fitting it, this is likely to change in the next two to five years. When this happens many people and organisations that have previously fitted PV may choose to add storage to maximise the benefits they receive from their solar panels.

It was also recommended that any remaining old lights were switched to LEDs, and that an upgrade to double glazing was considered for any remaining single glazed windows or secondary glazing across the site.

All these measures will improve the energy efficiency of Othona's site and/or maximise the benefits from the renewable energy that they generate.



'The grant has made it possible for us to fulfil our goal of making our new studio as near to carbon neutral as we can, and to make good progress in reducing the carbon footprint of the whole site.'

Elizabeth Sayers,
Trustee of the Othona
Community