

Renewable energy at the (PiP)

Project cost

£29,278

Estimated Savings

4 tonnes of CO₂e / £1,735 per year

Equipment / Installer

Daikin 24.1 kW Air Source Heat Pump – SwitchedOn (£10,383),
Tesla Powerwall - Wessex Eco Energy (£8,394)
5.12 kWp solar PV - Wessex Eco Energy (£12,316)

Grant
awarded:
£11,711

Estimated
Annual Savings:
4 tonnes of
CO₂e* / £1.7K**

The Project

In 2021, the Alcohol Education Trust installed solar panels on the roof of their new-build (a charity café, community space and public toilets), battery storage to maximise benefits from their panels, and an air-source heat pump to heat the space.

By including these low-carbon measures in the new-build, the overall carbon footprint of the building is expected to be 33% lower than if they hadn't, saving over 4 tonnes of CO₂e a year and an estimated £1.8K in running costs.

Getting started

The Alcohol Education Trust is a Dorset based charity that trains teachers, school nurses and youth workers to deliver health education to young people.

For the last decade the charity's team has worked out of a converted garden garage. Through extensive efforts, the team raised the funds to build a new office space to deliver their services. This new space now houses their head office, a community café, public toilets and a community room.



*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.

**Financial savings calculated using electricity prices in May 22 of 28p per kWh.

When planning this build, the Alcohol Education Trust consulted with the local school, residents, and landowner Duchy of Cornwall. And it was agreed that sustainability would be central to the build. Low Carbon Dorset were able to provide invaluable advice and funding to help the charity do this.

Solar PV

To ready themselves for a low-carbon future, the Alcohol Education Trust were keen to incorporate solar panels into their build. However, the aesthetic restrictions in place in Poundbury meant that standard solar panels would not be permitted. But an alternative, albeit more expensive, option was found in the form of low impact, in-roof PV panels (these are sometimes referred to as roof-integrated panels).

According to the suppliers, these panels are expected to generate around 5,970 kWh of electricity a year. It's anticipated the charity will use about 70% of the energy they generate with the remainder exported to the grid. If this self-consumption estimate is correct, the charity will save over £1,000 a year in electricity costs. They may also make some money for the energy they export to the grid through the [Smart Export Guarantee \(SEG\)](#) scheme – how much they will earn will depend on the price per kWh their energy supplier offers. The best rate currently available (May 22) is through Octopus Energy's fixed tariff which offers 7.5p for every kWh exported.

The installation of solar PV on the roof of the PiP is estimated to save around 3 tonnes of CO₂e a year and provide around a third of their energy requirements.

Battery Storage

In addition to the solar panels, the Alcohol Education Trust also decided to invest in a Tesla Powerwall battery. This battery storage allows them to make the most of the energy they are generating. The Powerwall stores energy produced by the panels (up to 13.5 kWh) which can then be used when they are not generating on very cloudy days or at night.

The financial savings from solar PV depend on how much of the energy generated is used and how much needs to be exported to the grid. This is because the price you pay to import electricity from the grid is significantly higher than the price you get paid for exporting/selling electricity to the grid.



Battery storage gives greater control over how and when you use the energy you generate, allowing you to replace the electricity you buy from the grid with the free electricity your panels are generating. It also provides a back-up in the case of power cuts and ensures the café's fridges and freezers keep running.

Although batteries are currently expensive, the cost of this technology is falling and it is expected to become more affordable in the coming years as battery systems are more widely adopted.

Air-Source Heat Pump

Mindful that the burning of gas will eventually need to be phased out, the Alcohol Education Trust were keen to avoid connecting their new pavilion to the gas network. This left them with two choices for heating: electric heaters or a heat pump system. To further reduce the environmental impact of the building, the charity opted to install an air-source heat pump. The high levels of insulation in the building will be well suited to a heat pump which will use electricity to provide heating far more efficiently than the standard electric panel radiators.

The installation of the air-source heat pump instead of electric panel heating will save over a tonne of CO₂e a year.

The heat pump cost around £10.4K to install and is expected to need about 730 kWh of electricity to power through the year. But how does this compare to the alternative option of electric panel radiators? It is estimated that electric panel radiators would use around 3,350 kWh a year of electricity to heat the same space. This means the charity can expect to save an estimated £735 a year in electricity costs by installing an air-source heat pump instead of electric heating.



“Making the PiP as green as possible not only makes sense for the environment but saves us building and running costs too. I love the app on my phone that tells me how much power the roof is generating and whether we are self-sufficient or not!”

Helena Conibear, CEO - The Alcohol Education Trust

