

Sunshine on the Penwith Centre

Summary

Like most organisations Penwith Community Development Trust (PDCT) seeks to become more sustainable and one way is to generate some of the electricity it needs from on-site renewable technology at its main office base at the Penwith Centre, Penzance.

In the autumn of 2008 a Community Energy Plus energy advisor did a 'walk round' of the building and learnt about how the building was being used. We then gave quick pointers to possible ways to reduce energy consumption and to what renewable technologies might be appropriate. The main option we decided to pursue was having a solar photovoltaic (PV) panel system on the roof of the single storey section of the building.

To be able to spend more time assessing this and other possible options in detail an application was made to the Community Sustainable Energy Programme (CSEP) for a grant to pay for a Feasibility Study to be done. This was successful and in December the Feasibility Study was carried out and used to support an application to the main CSEP fund for 50% of the cost of the proposed 7.56kWp PV system. An application was also made to the Low Carbon Building Programme for 50% (excl VAT @ 5%) of the cost of the system with the last 2.5% needed coming from PCDT reserves.

In March 2009 we heard that the CSEP application had been successful so planning permission was applied for. This was granted in June and the system was installed in July just in time to catch the summer sun.



Background

The building has two distinct parts. The new single storey section has wall and loft insulation as well as low energy lighting, which was installed when the building was renovated in 2001. The older two-story section is made with solid brick walls and an almost flat roof.



The first thing we look at is always what behaviour changes could be made e.g. are lights being left on when not needed. Changes such as ensuring lights are turned off cost nothing and can have a significant impact on energy use. The second area to look at is insulation as conserving is always more economic than generating energy.

The old section of the building with solid walls holds heat far less efficiently than the new section. Board insulation could be fixed to the inside of the walls but this is a job that

would cause major short-term disruption with repositioning wall sockets and decoration having to be done afterwards. Although beneficial in the long-term the costs up front would be a significant investment for a charity to make so this work was added to the ‘wish list’ of things to do when grant funding is available.

Renewable Options

The building uses about 60,000kWh of gas each year to heat it which is produced by two gas boilers. Although the CO₂ produced (11.4 tonnes – 0.185 KgCO₂/kWh) is a significant part of the buildings Carbon footprint as both boilers are relatively new and efficient replacing them with a wood chip or pellet boiler could not be justified even assuming the finance was available to do it.



Electricity is mainly used for lighting and office equipment but still amounts to a substantial 30,000 kWh a year. The clear option for the building was in having a photovoltaic solar panel system installed which would reduce the electricity bill by generator some of it on site.

The system proposed was for a 7.56 kWp grid connected system. This uses thirty six Sanyo Hybrid 210 panels which are fixed to the single storey roof. These produce an estimated 6048kWh of electricity a year (151000Kwh over 25 years) a large proportion of which should be used within the building with the rest exported to the grid.

Costs & Grants

The system cost £50844 + VAT (5%) and was installed by local installer ‘Plug in to the Sun’ and Planning Permission cost £170.

Grants were secured from the Low Carbon Building Programme (£25422) and the Community Sustainable Energy Programme (£26693) with the balance coming from PCDT reserves (£1271).

Carbon reduction

The PV system is estimated to reduce the Penwith Centres carbon footprint by 3.25 tonnes of CO₂ a year or 81 tonnes over the 25 year guaranteed life of the panels. (0.537 KgCO₂/kWh)



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