

Discovery Wind Turbine Project

Introduction

Established in 1985, the Dundee Heritage Trust was formed from a group of dedicated local people concerned that unless action was taken, important aspects of the city's industrial history would be lost forever. Trustees are drawn from a diverse range of community and business interests in Dundee and Tayside. The Trust is responsible for the conservation and restoration of the Royal Research Ship (RRS) Discovery, one of the world's most important ships. Now berthed at Discovery Point in Dundee, the ship forms the centre piece to the five star Discovery Point Museum, which focuses primarily on the 1901 British Antarctic Expedition led by Captain Scott and the heroic age of polar exploration.



The Discovery wind turbine project is designed to enable Dundee Heritage Trust to reduce its carbon emission and help demonstrate and promote the benefits of renewable energy to the 140,000 annual visitors to its museums. The project also forms part of an educational benefit which helps to connect community heritage - to modern scientific themes through educational workshops to local schools. In this case the first wind generator erected in Antarctica was erected onboard the RRS Discovery in 1901 -.

Equipment: 6 kW Proven Energy wind turbine

Having completed an audit of its energy usage, Dundee Heritage Trust looked for ways to reduce their carbon footprint. They approached their local Community Energy Scotland CARES Development Officer for guidance and advice about a variety of system options. The decision to site a wind turbine was based on advice from the energy audit which recommended a micro turbine plus photovoltaics. Photovoltaics were dismissed as the Dundee Heritage Trust felt this was overly costly for the returned yeild. The wind turbine was the preferred option due to the connection between the heritage and education. The following selection process for the wind turbine installation was carried out:

- Tenders were sought to supply a complete installation;
- Six different installers were asked to provide quotes for design and installation;
- The installers which were selected had shown a great deal of interest in the project and were keen to use Claverhouse – a government-funded employability programme - to carry out the work required. Their price was in line with or better than the other installers.

Cost and Grant Funding

Total Project cost	£ 32,660	The remaining funding was obtained through: Dundee Heritage Trust's own funds - £6,000 contribution committed based on reduced electricity usage
CARES grant	£ 26,128	
CARES grant Percentage	80.00%	

Fuel Bill Savings

The Energy Efficiency Report in June 2008 established a per annum usage of 1,315,000 kWh costing £70,000. The average annual energy produced by the wind turbine is around 11,390 kWh amounting to a saving of around £1,500.

Emission Savings

Estimated kWh savings p.a.	11,390
Annual CO ₂ savings (kg)	4897.7
Lifetime CO ₂ savings (kg)	97.954

Project Monitoring



An educational viewable monitoring system can be seen by all the visitors to Discovery point and can be accessed and interrogated remotely by the installers.

Local Impact

Reduced running costs allow much needed additional funds to be re-invested and to subsidise ongoing activities at this popular visitor attraction. The turbine is also a significant educational tool and plays a vital role in the delivery of educational workshops which highlight environmental issues surrounding weather and climate change. The promotion of renewable energy and its place within modern scientific research is further highlighted by additional displays within the museum which highlight the essential role

renewable energy plays in protecting Antarctica's unique environment.

Lessons Learned

Due to the limited space in the vicinity there was a compromise with the position of the turbine. This has limited the output with only 40% of capacity generated. The Trust described this as 'a little disappointing, however as the turbine is also playing a great role in education and raising the profile of renewable it is a success story'.

Mark Munsie from the Dundee Heritage Trust said:

"The Turbine is great, we like it! It generates electricity which you could say helps to preserve an historic ship, reduces our carbon emissions slightly, educates school children and visitors. Just on profile we have been approached by a number of organisations and presented at the London conference for Independent Museums about the project".

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