

University of Warwick Highly commended - student initiatives and campaigns “Turbine Trials and Tribulations”

Project partners

This project represented a partnership between the University of Warwick Estates Office and the student engineering society Engineers without Borders, together with resources provided by the School of Engineering and specialist consultants, V3 Power.

The problem

In late 2009, student members of the society, Engineers without Borders, approached the Estates Office to ask whether it would be interested in supporting their project to design, build, seek consent for, install and monitor the performance of a 1kW wind turbine. It was agreed to install the turbine in a relatively remote area of the main campus with limited current electrical capacity.

Planning permission was sought for the installation, with formal objections to the application necessitating the submission of additional technical information in the form of Computational Fluid Dynamics models completed by the students. Comfort in relation to the safety aspects of the proposed turbine was also required, requiring an intensive period of extreme testing by the students and the provision of appropriate documentation to satisfy these concerns.

The approach

The project involved the selection of an appropriate design, the carving of the blades, the assembly of the generator and gear box and the construction of the turbine housing. A formal planning application for the turbine, which included visual intrusion, noise impact and archaeological groundwork surveys, was submitted and, despite objections, planning permission was eventually granted in March 2010.

Safety concerns were allayed by specialist testing undertaken in association with specialists “V3 Power” at Nottingham University. Further method statements, risk assessments and maintenance schedules were also compiled in order to support the project.

Our goals

- Continue collaborative approach between the University Estates Office and students, helping to address some of the future sustainability challenges;
- Provide practical multi-disciplined project management experience to engineering students;
- Allow students to apply their knowledge in a real-life practical situation.

Obstacles and solutions

Funding constraints	The project costs were secured by the students from a variety of sources. Additional funding to complete the project was sought from Vice Chancellor and Dean of the School of Engineering.
Planning permission objections	Additional information submitted in support of the application to ensure planning consent was forthcoming.
Safety concerns	Specialist testing undertaken to satisfy necessary safety considerations.

Profile

- HE
- 18,900 FTE students
- 4,375 staff
- Sub Urban
- 290 hectares main



Green Gown Awards case study



Performance and results

In early October 2010, the turbine was finally hoisted aloft and subsequently connected in to provide renewable electricity to an isolated maintenance building on the Warwickshire side of the main campus. It is currently predicted to generate in the region of 300kWh per annum. The wind turbine is quite possibly the first grid connected (as opposed to battery charging) handbuilt wind turbine in the UK presenting the students, Estates Office, and University with a significant achievement. A commendation at the Green Gown Awards 2011 provided the ideal opportunity for the success of the project to be celebrated.

Lessons learned

- Students involved in the project have received true-life practical experience of the obstacles associated with the installation of renewable energy schemes.
- Furthermore, they have been exposed to challenges that are not engineering-focused and consequently have come to understand the multi-disciplined nature of such projects.
- An isolated Estates Office maintenance building received a small, but very welcome, increase in available electrical capacity.
- The student society Engineers Without Borders has significantly benefited from the project which has raised the profile of the society and attracted new members.
- It is also hoped that the wind turbine will form the basis of 3rd and 4th year research projects at the School of Engineering.

Further information

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