

Peace of mind

Dave March on an organisation that's providing quiet, efficient and aesthetically pleasing small scale turbines



Quietrevolution designs small scale wind turbine systems, with over 120 installations in four countries. The qr5 is known for its near-silent operation, aesthetics and a form that easily blends into architectural designs.

The qr5 form has been developed by a thorough application of detailed understanding of a wide variety of engineering disciplines, says Richard Cochrane, quietrevolution's CTO and inventor of the qr5. "We are very fortunate to have attracted some of the leading innovators in aerodynamics, structure and control system logic."

Quietrevolution is building a platform of engineering expertise that is pushing the boundaries of wind turbine design. For example, the decision by Cochrane to apply Darrius wind turbine principles to a swept troposkein shape is an inspired choice. "The troposkein form is structurally very efficient, reducing structural weight and therefore inertia, improving both aerodynamic performance and rotor response times," he explains.

Stephen Crosher, Commercial Director at quietrevolution, has a background in architectural design and is passionate about the potential for integrating the qr5 turbine into





architectural and civil infrastructure projects. "The potential is huge," he states. "For example, if a coastal town were renewing their sea defences and pedestrian areas, the additional cost of adding the foundations for our turbines is minute. We have a product that copes extremely well with the turbulent winds found close to buildings and structures. I believe we are unique in having a turbine that actually improves its power curve as turbulence increases."

The qr5 incorporates patented gust tracking technology which ensures the ratio between the speed of the aerofoil and the wind speed is constant. "This is vital if you want to maintain your C_p across your entire operating range," says Cochrane.

Stephen Crosher also comments: "It has not been easy. There have been a great number of challenges in designing a wind turbine from scratch, especially one which incorporates the sheer number of advanced safety systems that we incorporate into the qr5. The safety systems, such as the emergency brake and the vibration and impact detection, are essential if you are installing wind turbines close to people. However, they are also elements that have to be robust, reliable and function correctly."

Quietrevolution has developed a wind turbine that is suitable for siting close to people. The group considers it highly irresponsible that some



other wind turbine manufacturers offer products for installation in public spaces that do not have dual braking systems, automatic fault detection and turbine shut down if anything unexpected occurs.

Quietrevolution confesses it has had a couple of manufacturing issues during the early development stages of the rotor design, yet with a cumulative operational period of over 1,250,000 hours, the company is justifiably proud of their safety systems as they have always functioned as designed. To put this into perspective, a typical car is only in use for approximately 5,000 hours over a 15 year life span.

Quietrevolution is bullish about the future potential for small scale wind turbine systems due to a number of government policies, both implemented and anticipated, that are beginning to drive consumer demand. These policies include feed-in tariffs to improve the economics, Permitted Development Orders to facilitate a path through the planning process and a Green Bank to provide loans and upcoming requirements for on-site generation via the building regulations.

"There is always more that government can do to help an industry to grow but both the current administration and the previous one are committed to growing the deployment of on site renewables," says Crosher. "The improving political framework has enabled us to look at our supply

chain and become far bolder on volume commitments, resulting in better economics for us, which we are passing on to customers."

Quietrevolution recently announced a substantial 40 percent drop in its pricing structure. The group's short-term goal is to deliver a lower cost product to further stimulate demand and grow manufacturing volumes. The ability to make these bold steps is a result of the stimulation given by government policies and strong commitment from investors.

Cochrane was keen to talk about work in development to further reduce the noise levels of the already quiet qr5. "There are opportunities to reduce tip vortexes and aerodynamic noise still further. Our aim is to become recognised globally as the turbine of choice when noise or vibration is one of the key barriers to installation," he says.

Crosher adds: "We are pleased that we are being increasingly recognised for our efforts in noise reduction." Quietrevolution has recently been accepted as a member of NAS [the Noise Abatement Society].

Quietrevolution is one of a small group of emerging companies whose products may shape the future appearance of our windier towns and perhaps be at the forefront of re-establishing the UK as global leaders in product design, development and manufacturing. ■

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