Can Kite Power Revolutionize the Wind Industry?

Source: ecowatch.com

Published: January 30, 2017

Nexus Media

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Rod Read, an engineer and stay-at-home dad, lives on the remote Isle of Lewis in Scotland. For the past seven years, he's been designing a kite that he thinks could revolutionize wind power.

Click here to watch "A Scottish Engineer's Quest to Design a Kite That Can Power the World": https://youtu.be/22WS_UCa42o

His prototype, a series of spinning rainbow-colored rings, stands out against the gray Scottish sky. On a good day, the kite generates more than 450 watts. It's just a small model, but Read thinks the technology could be scaled up to the utility level. His model still needs more testing, but kites have a number of advantages over traditional turbines and several companies are developing kite-based generating systems.

Traditional wind turbines require a lot of concrete and steel, which makes them heavy and expensive to build. Kites are much lighter and cheaper. They can reach powerful winds at high altitudes that are inaccessible to fixed turbines.

The challenge is getting all that power back down to the ground. Read's solution is a series of spinning kites, which transfer their motion downwards via a rotating column of tensioned tethers. He links his small-model kite to the drive train of his electric bicycle, which he stakes down to the thick Hebridean turf. With his kite spinning above him, he can charge the bike's battery. His kite model looks flimsy, but it uses tension to its advantage, much like a suspension bridge.

Read grew up on the Isle of Lewis and said that island life lends itself to making and tinkering. “Everyones got their own ideas of self-reliance and self-sustainability,” he explained. “You’ve got to be a bit of a jack of all trades to survive on an island.”

Read imagines a big future for his invention. He’s created computer models of large arrays of connected kites, all generating power in unison. A network of kites, Read said, is safer and stronger than a single kite. If one kite fails, it is held aloft by the others. Read has published several of his designs on his website for anyone to use. More testing is needed to show the design can be scaled up, and Read is raising funds to help a PhD student at the nearby Strathclyde University test the design.

There are other kite-driven turbine designs in various stages of development around the world, including the Google-funded Makani Power in California. Scottish Kite Power Systems is building the UK’s first kite-driven power station this year.

Whether kite power takes off on the utility level remains yet to be seen. For Read, his next goal is to build a kite large enough to charge his electric car.