

DDMotion Develops a Technology To Reduce Costs, Increase Efficiency of Windmills

A startup in the U.S. state of Maryland has solved an electrical engineering problem: rotational inertia.

BALTIMORE, MD, UNITED STATES, February 17, 2025 /EINPresswire.com/ -- An inventor at [DDMotion](#), a startup company in the U.S. state of Maryland, has developed a technology which could greatly assist in increasing the volume of available green energy while reducing its cost.

It opens up new vistas for hydropower and makes wind and solar more grid-compatible without expensive power electronics.

Engineers believe the technology could alter the economics of wind and solar power and make available many low-head hydro projects that aren't now considered viable.

Key Han, a former General Electric engineer, has invented a device which can produce a constant speed output from a variable input, like the sun partially disappearing behind a cloud or the changing flow of a river.

Mr. Han's device converts that variability into a constant, reliable output with a rotating shaft turning at a constant speed.

This means that any body of water where there is movement can produce predictable, grid-stable power: a giant addition to the future of renewable energy.

When it comes to wind turbines, there are measurable advantages.

Mr. Han's technology solves a very real but little understood, outside of the world of electrical engineering, problem: rotational inertia.

Maintaining a constant frequency — 60 cycles per second in North America and 50 cycles per second in Europe — depends on the last few seconds of motion from a decelerating turbine.

Wind turbines aren't providing inertia. This represents a problem as they convert the generated variable alternating current to the direct current then invert back to grid-compatible alternating current. In that process of grooming the electricity, the rotational inertia is lost.

When the proportion of wind generation increases toward 50 percent — as it is in Germany — this loss of rotational inertia becomes a problem, and must be recreated with complex and expensive power electronics. In lay parlance, there needs to be a workaround.

Mr. Han says with his patented device, this all can be simplified and rotational inertia can be provided.

What is more, he says, much of the hardware in the nacelle (gearbox and inverter) can be eliminated and what is left can be installed on the ground rather than in the air, making maintenance much cheaper and safer.

DDMotion is looking for collaborators to promote and deploy the technology in Europe. The company's chairman is Alfred Berkeley, the legendary former president and vice chairman of the NASDAQ stock market. He has a reputation for bringing forward technology companies.

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