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CEC research on VAWT placement enhanced by Oxford Brookes Univ research

New research from Oxford Brookes University has found that wind turbines with a vertical axis, such as Wind Harvest's H-type turbines, can be more efficient than traditional propeller-type turbines. The study also validated earlier research funded by the California Energy commission which showed that when set in pairs, the H-type turbines increase each otherâ€™s performance by 15+%.

For more information with links to the CEC research, see attached Press Release.

Additional submitted attachment is included below.

For Immediate Release
11 May 2021

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New research shows Wind Harvester-type turbines can be more efficient than traditional propeller turbines

New research from Oxford Brookes University has found that wind turbines with a vertical axis, such as Wind Harvest's H-type turbines, can be more efficient than traditional propeller-type turbines. The study also validated earlier research funded by the California Energy commission which showed that when set in pairs, the H-type turbines increase each other's performance by 15+%.

The Oxford team conducted an in-depth study using more than 11,500 hours of computer simulation along with wind tunnel experiments to confirm this finding.

The most significant new discovery in the research was that Wind Harvester-type turbines increase each other's performance when arranged in multiple rows placed at slight angles to the prevailing wind. Rows of traditional horizontally-spinning propeller-type turbines have to be spaced far apart from one another which results in significant reductions in energy output from the rows further downwind. The Oxford study shows that the opposite can happen with rows of closely spaced, vertically spinning H-type rotors. The second and third rows can out-produce the first row!

The lead academic, Professor Tzanakis, comments "This study evidences that the future of wind farms should be vertical. Vertical axis wind farm turbines can be placed much closer together, increasing their efficiency and ultimately lowering the prices of electricity. In the long run, VAWTs can help accelerate the green transition of our energy systems, so that more clean and sustainable energy comes from renewable sources."

"Wind Harvest gets a boost from studies that show the synergistic promise of near-ground wind turbines", stated CEO Kevin Wolf. "Our stiff, aircraft aluminum blades allow our rotors to spin closer together than was modeled in the Oxford Brookes study, and, our hypothesis is that the tighter the turbines are placed in arrays and rows, the closer the next row can be to its upwind neighbor."

Also, mentioned in the study is the **Global Wind Report 2021** that noted the world needs to be installing wind power three times faster over the next decade, in order to meet net zero targets.

"Our studies using UL Windnavigator's estimates show that 20% of existing traditional wind farms have low enough wind shears and fast enough near-ground wind speeds to profitably add our types of turbines beneath the existing turbines," noted Wolf. "The Oxford Brookes' study indicates that some of these wind farms could squeeze in another 40% more Wind Harvesters than the CEC-related research predicted and further amplify the gift of near-ground winds."

About Wind Harvest
Headquartered in Sacramento, California, Wind Harvest has a technological solution that can capture enormous amounts of previously unusable wind energy without harming wildlife. Its v3.1 prototype is expected to pass through Technology Readiness Level 7 this summer. For more information, visit https://windharvest.com.