Americas Cup Sailing Points the Way to Floating Wind Turbine Technology

American Offshore Energy takes a page out of the Americas Cup sailboat design technology to build a high tech, low cost, floating, Vertical Axis Wind Turbine (VAWT). The aerodynamic section of this VAWT is built with a combination of tension and compression design principles allowing for stiff light weight structures that can scale to large size. The low center of gravity and broad support base makes for a stable floating wind turbine design.

With kinematic support bearings and generation at the perimeter, there is no central shaft. Each bearing point is directly above one of three floats which are tied together structurally and each secured to an anchor screw in the sea floor located to provide anti rotation.

It would be assembled at shore and could be towed though shallow water out to deep water moorings. Sail type air foils are the lowest cost per sq.ft. and the lightest weight air foils possible. They can be automatically reefed to fit conditions or completely furled for hurricanes. A turbine 100 miles off shore could be towed back for major repairs in a day. This reduction in risk reduces the cost of capital and insurance on the project.

Floating turbines allow for siting wind farms more than 25 miles off shore, putting them out of migratory bird patterns, NIMBY issues, and State Jurisdictions. The day time thermal issues that require high towers on land are eliminated far at sea as wind aloft reattaches to the surface providing high capacity factors. Capital costs for the large castings, gears and roller bearings in the conventional turbine supply chain are not necessary with this design, manufacturing could scale quickly using common steel fabrication and fiber glass technologies. A franchise model could put wind turbine factories and jobs in our old ship building, Navy Yards or cargo transfer ports across our coasts and great lakes and allow us to leapfrog foreign turbine builders with a technology that suits America's resources.

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