Wind Fisher: Autonomous Kite Towed Submarine for Airborne Wind Energy Capture and Storage

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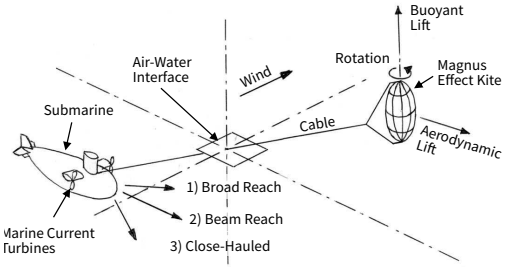
Wind Fisher is a new startup project, based in France, designing and developing an autonomous maritime platform, consisting of a Magnus effect, lighter-than-air kite, pulling a submarine with marine current turbines for electrical generation and with a chemical synthesis plant for energy conversion and storage. The figure shows a functional schematic of the Wind Fisher System.



Functional schematic of the Wind Fisher System

Wind Fisher submarines are designed to operate in the Southern Ocean around Antarctica, isolated from other human activities, to chase the persistent winds in this region. In this manner, the Wind Fisher system resolves two commonly voiced problems for the AWE industry: 1) Airspace conflict with aviation due to the flying kites and tethers; and 2) Safety of the general public in case of loss of flight control and subsequent crash.
The authors intend to present their theoretical work regarding:

- The system design features and trades to be made to insure: an autonomous functioning of the system in different conditions (up wind, down wind, and no wind), as well as, an overall positive generated power.
- The Magnus effect kite control approach, including the balloon rotation velocity control and the navigation of the kite.
- As well as, the development status for a Magnus effect kite prototype to be built for the concept validation step.