

Press release
Gothenburg, 2022-09-20

White paper: Possible to dramatically increase power density in wind farms with SeaTwirl's vertical axis turbines

Due to faster wake recovery, it is possible to place SeaTwirl's vertical axis wind turbines (VAWT) closer together in a wind farm and get more power generation from the same area, simulations in a new white paper show.

SeaTwirl commissioned the white paper from Dr Pablo Ouro, a researcher at the University of Manchester. It investigated different spacing configurations in windfarms with 25 10 MW turbines placed in five rows. Due to reduced wake interference, VAWT outperformed horizontal axis wind turbines (HAWT) in all scenarios. The paper concluded: "VA[W]T wakes recover faster than HA[W]T wakes due to the different mixing with the atmospheric flows which in turn leads to more efficient arrays."

"It is due to the higher turbulence intensity. A simple way to visualise this is to think of a stream of water. If you put a propeller in the water, it will create a long swirl behind it. But if you stir the water with a spoon, the turbulence it creates will subside much faster", says Jonas Boström, CTO of SeaTwirl.

The most dramatic difference was with slender VAWT, i.e. turbines that are taller but have a smaller diameter, that reached a power density of almost 19 MW/km² compared with 2.65 MW/km² for a typical HAWT configuration. Changing the aspect ratio, the relative width and height, while keeping the area swept by the turbine constant is unique for VAWTs and strengthens SeaTwirl in discussions with developers.

"There are discussions in many countries to increase the power density demands for coming offshore wind farms to avoid building in eco conservation areas. This white paper shows that SeaTwirl can be placed in very dense wind farms without losing much efficiency due to wake effects. It adds to our already strong value proposition for developers", says Peter Laurits, CEO of SeaTwirl.

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About SeaTwirl

SeaTwirl AB (publ) is a Swedish energy tech company in wind power with the vision to become global leader in floating offshore wind farms. SeaTwirl's unique floating vertical-axis wind turbine is simple and robust with few moving parts. This suits the conditions at sea and minimizes the need for maintenance, which leads to less downtime and operating hours. These are key requirements for reducing the costs associated with the production of energy. The company's first prototype was installed in the sea in 2015. Development is now taking place on the next full-scale unit of 1 MW installed turbine output. The company has been listed on Nasdaq First North Growth Market since 2016. Read more at:

<https://seatwirl.com>

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