

TwingTec's pilot system next to a wind turbine of comparable power (28 August 2019)



TwingTec's mobile pilot system ready for launching (28 August 2019)





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TwingTec's Roadmap From Full Proof of Concept to the First Commercial Product

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TwingTec

TwingTec is an AWE leader with its ground based generation - rigid wing - VTOL technology. Our main design drivers have been economics, fully automated operation and safety. Key enablers for our product are the emerging civil drone industry and e-aviation. Last year we have reached full proof of concept with a small scale prototype, where launching from a platform on a ground station, power production and landing on the same platform at the specified level of automation was demonstrated.

Extensive testing of the prototype has allowed us to validate the performance of the prototype and our simulation tools. These simulation tools enabled us to determine the power curves of our products ranging from 100 kW to 3 MW and to estimate the annual energy production at different sites. The detailed analysis shows, that the LCOE strongly depends on the size of the system. As a result, products in the range of 100 kW to 500 kW are highly competitive with diesel generators which typically produce electricity for 20-30 Cents/kWh. Integrated in standard shipping containers, these products are easy to transport and deploy which is a major advantage in the off-grid market, where power consumers such as island, communities and mines are often in remote locations which makes the installation of conventional wind turbines prohibitively expensive.

Larger products from 500 kW onwards are interesting for

on-grid applications. Our LCOE analysis shows, that the multi-megawatt units have the potential to significantly lower the LCOE of conventional wind turbines, taking favour of the dramatically reduced need for materials and the higher energy production due to their operation at higher altitudes. Installed on floating platforms, airborne wind energy farms with megawatt units will unlock deep off-shore wind, a huge market opportunity where the production potential in Europe alone has been estimated to be 4 TW [1].

With the learnings from the proof-of-concept prototype we started to build a scaled pilot system together with industrial partners this year. The pilot will be tested and operated in Switzerland and abroad. The key focus is on long-term testing and customer demonstrations. In parallel, we will design and build our first commercial 100 kW product for the off-grid market. We are convinced that off-grid is a very interesting starting market for airborne wind energy. Off-grid enables a fast market entry with a relatively small product without the need for subsidies.

References:

[1] *Wind Europe, Floating Off-shore Wind Vision Statement (2017).* <https://windeurope.org/about-wind/reports/floating-vision-statement/>





TwingTec's 100 kW product for off-grid applications

