



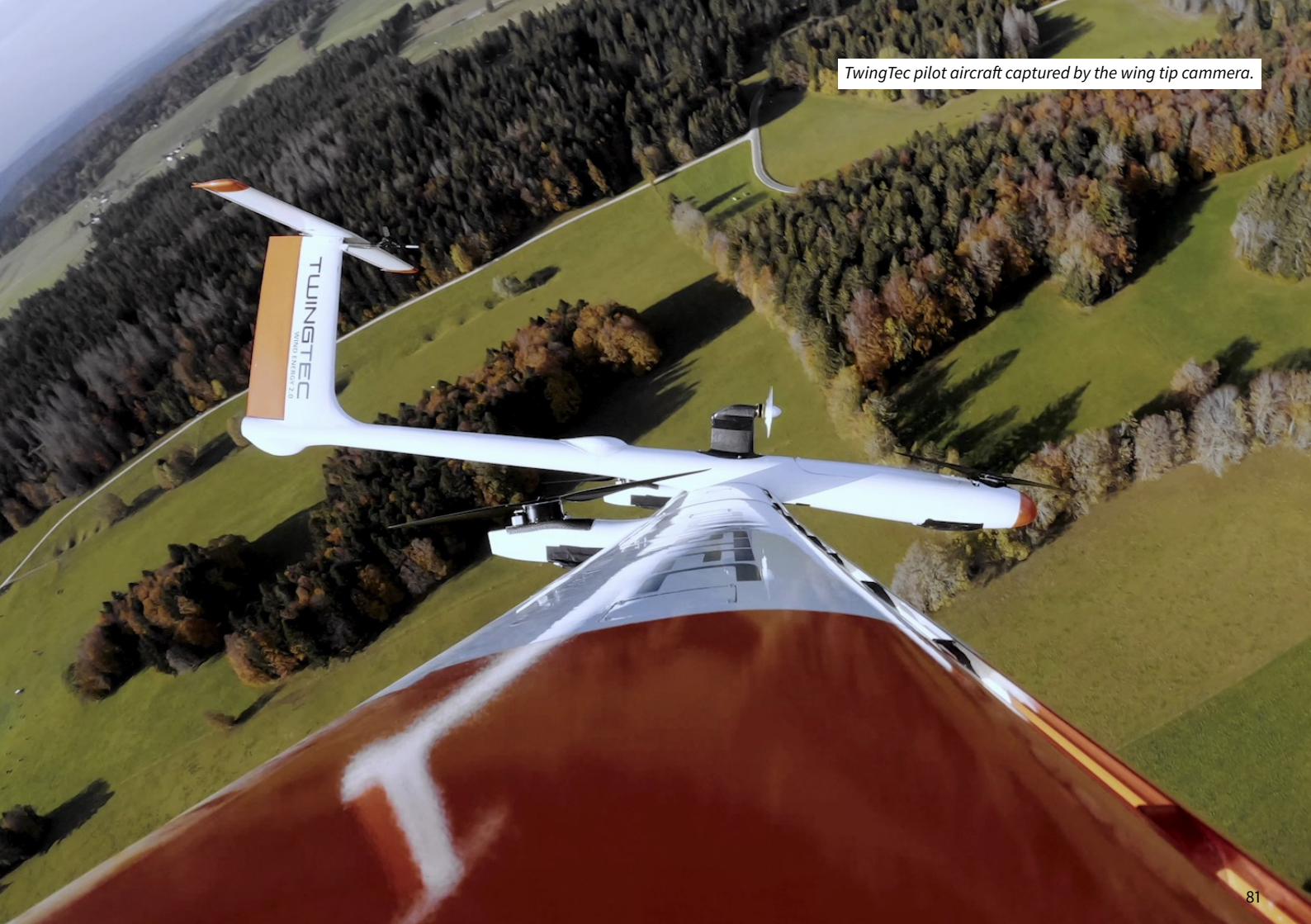
TwingTec pilot system lifting off from its launch platform.



TwingTec pilot system in dawn.



TwingTec pilot aircraft captured by the wing tip camera.



Rendering of large-scale TwingTec systems deployed offshore.





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TwingTec's Path to Commercialisation

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While the net zero target for 2050 has been confirmed during COP26, elaborated predictions indicate that we are not on track to reach this goal [1]. As a matter of fact, what can be achieved in this decade will be decisive. The energy transition will be driven by the deployment of terawatts of solar and wind power. However, the main technologies PV and wind turbines, although today fully commercialized and cost effective, have their limitations. The key to reach the climate target is a mix of different power technologies, each deployed where it makes most sense. AWE is in many aspects complementary both to PV and wind turbines. It can unlock vast resources of renewable energy where the incumbents are not economical. The mobility of AWE is a key differentiator, which is of particular interest for off-grid and remote power users. Decentralized power is an interesting market but in order to have a significant contribution to the energy transition AWE needs to operate at the utility scale with MW sized units. However, it might be very difficult to attract the significant investments needed to scale up the technology to be competitive in the utility market if smaller units are not first successfully commercialized in the decentralized power market. The challenge for the AWE OEM's is to develop a first product in short time which is at the same time very attractive for the decentralized power market and the stepping stone for a fast entry of the utility market. Working with strategic customers active in the de-

centralized market, TwingTec has performed a number of product-market-fit studies which have shaped our commercialization roadmap. A key learning from these studies was that the cost of energy of AWE has to be significantly lower than for diesel power in order to obtain the market penetration needed to justify the investments for the product development as well as the production volumes to become cost competitive. As a result products below 100 kW might only reach a marginal market share while larger units will be significantly more attractive and will reduce the step to the high volume high impact utility market.



TwingTec's small scale pilot system.

References:

[1] DNV Energy Transition Outlook 2021 - A global and regional forecast. DNV, 2021.