

Kitekraft founding team (August 2020).





Florian Bauer

Co-CEO, CTO, and Co-Founder
kiteKRAFT GmbH

Adolf-Hackenberg-Str. 26
81737 Munich
Germany

info@kitekraft.de
www.kitekraft.de

K I T E // K R A F T



Kitekraft: Building Flying Wind Turbines

Florian Bauer, Maximilian Isensee, André Frirdich, Christoph Drexler
kiteKRAFT GmbH

Kitekraft was founded in 2019 with the mission to enable the world's transition to 100% clean energy with 10x more efficient wind turbines. Although the company is relatively young compared to other players in the AWE sector, it is deeply rooted in the academic and entrepreneurial ecosystem of the Technical University of Munich. We came together when Christoph and André were writing their master's theses in the scope of a project Florian had initiated for his PhD research: Kitekraft. Max had just moved to Munich and contributed his experience in the startup world and business development.

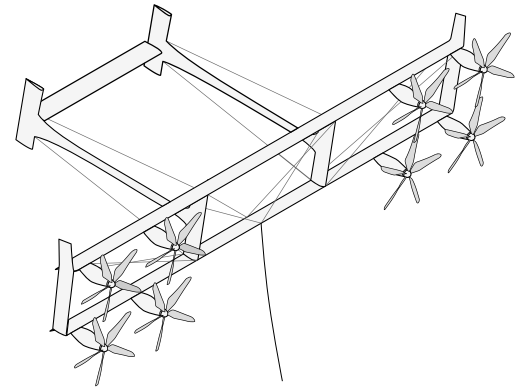
Designing airborne wind energy systems and bringing them to market was the perfect match for our ambitions to fight climate change. And the timing was right: technology components had advanced to be powerful and lightweight enough to meet the challenging requirements of airborne wind energy conversion. The market demands innovative solutions to generate energy more efficiently and at a lower cost. And people and governments around the world realize that the climate crisis is already in progress and cannot be ignored any longer.

Building on our many years of academic research and development, we opted for a concept where the electricity is generated onboard the kite, with small wind turbines, using the tether also as an electrical conductor. The boxplane structure with a truss-like airframe maximizes the rigidity while minimizing the weight. Both factors increase the achievable power density, allowing economic viability even at small system sizes. The non-tapered wings can be produced by a cost-effective and

highly scalable aluminium extrusion process.

Eight onboard electrical machines are used as motors during take-off and landing. The same machines are used as generators during crosswind flight. The single-point attachment of the tether ensures full roll-control freedom of the kite for optimum power harvesting efficiency and stability. The conducting tether consists of a Kevlar core to transfer tensile forces and electrical cables spiralling around the core.

We verify design changes as quickly as possible with real-world tests, whose results feed our simulation models, our digital twins.



Kitekraft boxwing design with onboard wind turbines.