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## Achieving Ultralight, Rigid, Durable, Low-Cost Composite AWE Kites With Efficient Design and Manufacturing

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The economic viability of AWE systems is linked to the performance, robustness, and economics of the wing. This represents a challenging field of research and development – to manufacture cost effective composite wings. At EnerKite, the choice of ultralight, multi-tethered rigid wings prescribe unique requirements that cannot be readily achieved with conventional techniques from aircraft wings.

EnerKite is collaborating with DLR, TU-Berlin, and INVENT GmbH within the industrial research project EnerWing, funded by the German Federal Ministry of Economics and Technology BMWi [1]. The aim of the project is to set up validated design methodologies and toolchains for rapid iteration of wing configurations and designs. This allows for optimized, use-case, and site-specific scalable wings to be effectively designed and manufactured.

In this work, we present our practical experiences from multi-generational kite development and manufacturing composites over the years.

#### References:

[1] EnArgus: Verbundvorhaben: EnerWing\_xM - Konzeption und Auslegung der Flügeltechnologie für systemdienliche Flugwindkraftanlagen der Megawatt-Klasse, 2019. <https://www.enargus.de/pub/bscw.cgi/?op=enargus.eps2&q=01185154/1>



Dbox and rib skeleton, with membrane cover of early generation prototype wing.