

MSc Thesis Description

- **Title:** Rigidized Subscale Leading Edge Inflatable Kite Wind Tunnel Test
- **Field:** Airborne Wind Energy
- **Project Start Date:** 01/11/2023
- **Tentative End Date:** 31/07/2024
- **Supervisors:**
 - Jelle Poland, TU Delft (daily supervisor)
 - Roland Schmehl, TU Delft (overseeing supervisor)
 - Mac Gaunaa, DTU
- **Problem statement:** In the field of leading edge inflatable (LEI) kites, available experimental data is scarce to this date. Due to the fact that these kites are soft and therefore deform constantly in flight, setting up such experiments is impossible: the aeroelastic effects of the fabric structures do not scale.. However, when rigidizing such an inflatable kite, the deformations are zero and the aerodynamic forces can be used to validate the CFD simulations and models (which often assume no deformations).
- **Main Objective:** The objective of this project is to build and test a rigidized subscale LEI kite model in the Open Jet Facility (OJF) at TU Delft. The desired results of the project are the aerodynamic characteristics of the kite, such as the lift/drag polars, and flow fields around the kite. These results will be obtained by doing force balance measurements and particle image velocimetry (PIV), respectively.