

Autonomous pressure and acoustic measurement system for wind turbine blades

- An on-going Swiss-funded project, *AeroSense*, running from May 2020-May 2023 in collaboration with ETH Zurich, aims to:
 - Develop a non intrusive, easy to install, self-sustaining and wirelessly transmitting surface pressure and acoustic smart measurement system for wind turbine blades.
 - Build, test and validate a prototype system on a multi-MW wind turbine (up to TRL 6).
 - Develop a digital twin with multi-fidelity management to complement and enhance experimental results in combination with machine learning.
 - Ultimately develop an affordable and reliable solution for wind turbine design and performance monitoring, reducing LCOE of wind energy.
- By bringing our experience and measurement system to offshore wind turbines, we propose to contribute to this call by:
 - Monitoring the aerodynamic, structural and power performance of offshore wind turbines to improve understanding and develop strategies for reducing investment and operating costs.
 - Measuring the effects and impact of performance degradation such as leading edge erosion and amplitude modulation.
 - Measuring the influence of the movements of the floating platform on the pressure distribution over the blades.
 - Combining our pressure and noise measurements with wake measurements to help improve wind farm control and grid integration.
 - Providing access to our digital twin and data storage platform for combining measurements with simulations, allowing easy data sharing and collaboration within the consortium.
 - Bringing in other Swiss consortium members via The Swiss Wind Energy R&D Network, if desired.

