

Development and test of bio-materials for wind turbine blades

- An on-going university-internal project, *Recycloblade*, involves developing and testing wind turbine blades using biomaterials as follows:
 - Choice of material: flax fibres with bio-epoxy.
 - Build and static tests of material samples to characterise the material properties.
 - Design and manufacture of new blades for a small wind turbine (1 kW, 1 m blades).
 - Test of the new rotor in the wind tunnel using strain gauges.
 - Installation and test of the new rotor in the field.
 - Life-Cycle Analysis of the manufacturing process.
 - Wind turbine simulations and comparison to blades out of standard material.
- Based on the learnings of the Recycloblade project, we propose to contribute to this call by:
 - Designing, manufacturing and testing wind turbine blade samples using various bio-materials.
 - Designing, manufacturing, installing and testing medium-sized wind turbine blades on an operating 6 kW test turbine in the field using these bio-materials.
 - Implementing measurement campaigns on wind turbine blades of operating wind turbines for tests carried out by other project partners.
 - Providing a collaboration and data storage platform based on a separate project (The Swiss Wind Energy Machine Learning Platform).
 - Comparing results and evaluating performance of the different materials.
 - Carrying out a Life-Cycle Analysis of the manufacturing process compared to the standard process.
 - Bringing in other Swiss consortium members via The Swiss Wind Energy R&D Network, if desired.

