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Atmospheric Full Scale Testing of a Morphing Trailing Edge Flap System for Wind Turbine Blades

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Abstract : A novel Active Flap System (AFS) has been developed at DTU Wind Energy, as a result of a 3-year R\&D project following almost 10 years of innovative research in this field. The full-scale AFS comprises an active deformable trailing edge has been tested at the unique rotating test facility at the Risoe Campus of DTU Wind Energy in Denmark. The design and instrumentation of the wing section and the active flap system (AFS) are described. The general description and objectives of the rotating test rig at the Risoe campus of DTU are presented, as used for the aeroelastic testing of the AFS in the recently finalized INDUFLAP project. The general description and objectives are presented, along with an overview of sensors on the setup and the test cases. The post-processing of data is discussed and results of steady flap step and azimuth control flap cases are presented.

Keywords : morphing, adaptive, flap, smart blade, wind turbine
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