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# Wind turbine blade trailing edge failure assessment with sub-component test on static and fatigue load conditions

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## Abstract

Wind turbine blades present different types of failure mechanisms and modes which are associated with specific loading conditions. Trailing edge failure mode has been documented in full-scale blade tests as one of the failure types observed in blades on service. Trailing edge failure is characterized by failure of the trailing edge adhesive joint and the buckling of the trailing edge sandwich panels. This failure is governed by the contribution of edgewise, flapwise and torsion moments, with edgewise moments being the main driver. This paper describes a blade sub-component test setup suitable for studying trailing edge failure on static and fatigue load conditions, which is an improvement in the experimental verification of a trailing edge blade design. The test setup and design drivers are described and studied via FE models. Static and fatigue test results are reported for a full-scale blade section sub-component obtained from a 34 [m] wind turbine blade. Moreover, experimental results are discussed and compared with FE models to describe and study the trailing edge failure mechanism.

*Keywords:* wind turbine blade, adhesive, sub component, buckling, edge moment, trailing, failure

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