Improved design for large wind turbine blades of fibre composites (Phase 4) - Summary report

Results are summarised for the project "Improved design for large wind turbine blades (Phase 4)", partially supported by the Danish Energy Agency under the Ministry of Climate and Energy through the EUDP journal no.: 33033-0267. The aim of the project was to develop new and better design methods for wind turbine blades, so that uncertainties associated with damage and defects can be reduced. The topics that are studied include buckling-driven delamination of flat load-carrying laminates, cracking along interfaces in material joints (fracture mechanical characterisation and modelling), cyclic crack growth with large scale bridging and the use of cohesive laws in finite element programmes for simulating wind turbine blade failure. An overview is given of the methods and the major research results of the project. The implementation of the knowledge in the industry is discussed. Finally, some ideas for future research activities are considered.

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