

# WALiD

Wind Blade Using Cost-Effective Advanced Composite Lightweight Design

Combining design, material and process developments using thermoplastic materials to create cost-effective, lightweight and recyclable blades.





## Blade Root

**An improved blade root design which introduces a new connection concept.**

The design includes a novel approach that uses thermoplastic materials to generate the blade structures and consists of high-performance composites processed with an automated fibre placement process. Benefits include savings in both weight and costs and the ability to produce large wind turbine blade structures.



## Spar Cap

**A new concept for the production of spar caps that has a particular focus on weight saving and easy maintenance.**

A specially adapted robot carries out automatic fibre placement, together with unidirectional tapes and materials such as mixed glass and carbon fibre, ensuring that the finished structure is strong, rigid and lightweight.



## Shear Web

**An innovative lightweight design for the shear web connects the two outer shells of the wind blade** and replaces the thermoset materials with a framework of new materials, including thermoplastic composites and foams.



## Outer Coatings

**A reinforced thermoplastic coating with anti-icing properties and durability against abrasion to improve environmental resistance.**

This, combined with a new predictive simulation model, predicts the coating lifetime where droplet impingement is dominant. Erosion resistance of the wind turbine blade has also been improved with the development of a smart layer on top of the fibre reinforced outer shell.



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