

Efficiency of operation of wind turbine rotors optimized by the Glauert and Betz methods - DTU Orbit (08/11/2017)

Efficiency of operation of wind turbine rotors optimized by the Glauert and Betz methods

The models of two types of rotors with blades constructed using different optimization methods are compared experimentally. In the first case, the Glauert optimization by the pulsed method is used, which is applied independently for each individual blade cross section. This method remains the main approach in designing rotors of various duties. The construction of the other rotor is based on the Betz idea about optimization of rotors by determining a special distribution of circulation over the blade, which ensures the helical structure of the wake behind the rotor. It is established for the first time as a result of direct experimental comparison that the rotor constructed using the Betz method makes it possible to extract more kinetic energy from the homogeneous incoming flow.

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