

Wes 2017-5 Design of advanced airfoils for stall-regulated wind turbines - Grasso et al.

The paper treats the design of airfoils for small stall controlled wind turbines using an optimizer, focusing on induced-vibration sensitivity and peak power.

The following remarks can be made:

- The authors are advised to check the English in their paper, since there are many errors

About the design methodology

The value of the lift and drag in the stalled region are of primary importance for the prediction of power and of the induced vibration sensitivity of a stall controlled turbine. RFOIL is used to calculate the airfoil performance in the optimization process. The authors give no evidence that RFOIL is predicting the characteristics well for the stalled region. I would expect at least a couple of comparisons with wind tunnel experiments to show how well RFOIL is doing in this respect. In short: what is the predictive value of RFOIL for this class of airfoils (thickness, maximum lift) and Reynolds numbers?

Furthermore it is stated that WtPerf is used. What is the input to this program for the high angles of attack to calculate the power? What method was used? In what part of the power curve (e.g. figure 1) can we see the differences in airfoil post stall lift and drag ?

Figure 1 shows the lift curves for 2 airfoils. Without additional information it is not clear how this lift performance contributes to the power curves at the right hand side.

Page 5, lines 183-190 about the maximum lift coefficient. Please rephrase. Now it is not so clear what is meant here.

Figures 4 to 10: Please use one color per airfoil and e.g. a solid line for the clean case and one with symbols for the rough case.

Page 7, line 226. What exactly is the design point for this type of airfoils?

Page 10, line 295. Generally a coastal region is not associated with a low wind speed.

Figure 14 is quite misleading actually. In practice the pitch is constant for a stall turbine. The effect of fixed transition is lower power.

Talking about fixing transition: at what chord location was transition fixed?

Table 1: what wind regime was used to calculate the AEP?

Conclusion: this is a purely theoretical study. Without any reference to reality it remains unclear if this airfoil indeed leads to the predicted increase in rotor performance.