

Measurement of Blade Angles on Wind Turbines

A high potential for optimal operation of wind turbines is linked to the right rotor adjustment and balance. The set blade angles have a strong impact on the performance, but also on the emerging loads.

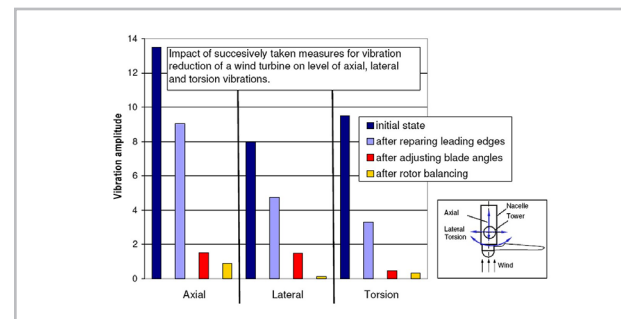


Rotor of a 2 MW wind turbine

The individually set pitch angle of the three blades (“blade angles”) and the overall controller setting of the pitch angles for all blades (“rotor setting”) are examined in order to identify and quantify relative deviations among the three blades and overall deviations of all pitch angles with respect to the set value.

Relative blade angle deviations are the most common cause for aerodynamic rotor imbalance. This leads to suboptimal air flow at the three blades, which causes harmful vibrations and can reduce the power output, too. According to our measurements, already blade angle differences of more than 0.3° lead to aerodynamic imbalance.

BerlinWind applies optical methods, which allow our experts to determine blade angles, accurate to a tenth of a degree. Based on the measurement results, it is possible to adjust the blade angles and thereby reduce the vibration level.



Vibration reduction by actions taken at a wind turbine with heavy leading edge erosion