

Wiebke Langreder – THE IMPACT OF TURBULENCE ON POWER CURVES

The awareness that measured power curves depend on more site-specific parameters than covered by international standards is growing. The effect of turbulence intensity is difficult to evaluate because the anemometer as well as the turbine react in specific but different ways to turbulence intensity. Furthermore the process of binning will introduce an inherent numeric error due to the non-linearity of the power curve. Because the physics makes it difficult to determine the effects of turbulence on anemometer, turbine and numerics separately, a method is presented to quantify all three effects in total. The method has been tested for different types of turbines with good results. Hence the uncertainty related to site specific turbulence on the power curve can be reduced.