



## Prototype Measurement

## Power Curve

There are two important points of reference that will allow potential operators of wind energy systems (WES) to deduce whether their investment will prove to be profitable for them. On the one hand, there is the wind potential at the chosen location, on the other hand, there is the **power curve** of the selected WES.

The power curve characterises the efficiency of a WES at a certain location. It is essential that this, together with the wind potential, is taken into consideration for the yield calculation of significant wind park projects; as such it should be one of the factors for investment decisions.

And for this reason it should actually be measured and not just calculated. For even small deviations between theory and practice can lead to great yield losses.

A power curve measured according to international directives gives planning reliability to potential investors.

On the one hand they can argue reliably with potential shareholders, on the other hand they can significantly reduce the risk of misinvestments for themselves and others.

Furthermore, they are able to assert liability claims against the manufacturers if any technical faults are found during the follow-up measurements of the WES that are thought necessary.

Sound measurements or follow-up measurements of the power curve significantly facilitate negotiations with banks or manufacturers. The security requirements on individual WES or wind parks in terms of finance or technology are constantly increasing.

**wtg is accredited for power curve measurements according to ISO EN 17025 and has the Measnet approval for this field.**

## Benefit to the Customer



## Implementation

Power curves are based on measured values and illustrate the average generated output as a function of the average values of uninterrupted wind speed at hub height.

The data are recorded continuously, and the recorded raw data are reduced to 1 minute and 10 minute average values (incl. minima, maxima and standard deviation) and saved as time series.

The selected data sets are adjusted to the conditions of the reference air density according to the applied standard or directive and classified according to the BIN method.

Depending on the directive, a certain number of data sets are required per BIN (i.e. per wind speed interval). The average values of all BIN are the data points of the power curve.

The following data are recorded:

- Wind speed (only calibrated anemometers are used according to the directive),
- Electrical effective power of the WES,
- Air density and temperature,
- Rain.

As a rule, power curve measurements are carried out according to the international directive IEC 61400-12, the FGW directive TR2 "Bestimmung der Leistungskurve und standardisierten Energieerträgen" (Determination of the power curve and standardised energy yields) and the Measnet directive "Power Power".

