



Sound Immission Measurement

Emissions and immissions – two sides of a coin that of course are directly linked. For Germany the TA Lärm (Technical Instructions on Noise) and the BundesImmissionsSchutzGesetz (German Federal Immission Control Act) stipulate how many decibels are allowed to "reach" different environments at different times of day and night.

Criteria for the determination are the wind energy system (WES) as sound source, but also the structure of the respective site, other background noise sources close by or further away and the wind speed per se.

Sound Emission -

Characteristic of a WES

Consequently, not only the sound emissions of the WES are determined, but also the background noise and other initial levels of pollution are measured.

- Sound emission characteristic values of a WES are the basis for the project planning of individual installations and wind parks. They help in the design and optimisation of projects according to the procedure of sound propagation calculation. Often they are even contained in the construction permit as a prerequisite.
- Unacceptable deviations of sound emissions during the operation of a WES result in exceeding the standard values and in the worst-case scenario can lead to the shutdown of existing WES.
- Avoidance of exceedances can be achieved by forecasting: the calculation of immissions to adjacent buildings; this requires reliable emission values of the WES.
- The precise evaluation of emissions is only possible by means of reliable measuring procedures that take into account the special conditions of WES.
- The characteristic values are generally given for different wind speeds (WS) of 6 m/s to 10 m/s at a height of 10 m. 10 m Höhe angegeben.



Benefit to the Customer

The tests of the extent, to which WES result in an unacceptable strain for the environment, are carried out at the Federal State level according to the Technische Anweisung (TA) Lärm (Technical Instructions on Noise) or VDI 2058 Bl. 1 and DIN ISO 9613-2 as procedural instructions. They define the general conditions for the operation or the measurements. Such measurements may be commissioned by manufacturers, operators, authorities or courts.

In addition, customers can request wtg's expert support for permit procedures or negotiations with the respective licensing or supervising authorities, such as consulting or project monitoring in case of acoustic problems.

- **wtg is a Designated Measuring Agency for sound measurements of WES according to § 26 BimSchG (German Federal Immission Control Act) in 15 federal states.**
- **Accredited according to ISO EN 17025 for sound emission measurements, sound immission measurements, structure-borne sound measurements and sound immission projections**
- **Representative of the FGW Technical Committee, the most important national body for the subject of sound in WES**
- **FGW Conformity Seal**
- **Co-ordinator of the "Noise Expert Group" of MEASNET**

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Implementation

Sound immission measurements are demanded by the respective authorities within a certain period of time after the start-up of a WES as a requirement of the construction permit. They document that the calculated immission levels in the environment correspond to the actually existing evaluation levels. The measuring concept is adjusted to the requirements of the respective site. Additionally, as a rule agreement with the respective authorities on the measuring concept is required.

Procedure:

- Submission of maps with marked sites of systems, submission of the sound immission calculations from the construction application process,
- Submission of the excerpt "Requirements" of the construction permit,
- Agreement of the measuring concept with the respective authorities,
- On-site measurements under reference conditions (app. 6 - 10 m/s wind speed at a height of 10 m),
- Evaluation of the measured data, including determination of the immission level and any anomalies,
- Preparation of a measuring report for submission to the respective authorities.

Recorded Data

Recording of the following data:

- Wind speed, air pressure, temperature and humidity,
- Different sound pressure levels (with the WES in operation and at a standstill),
- Effective power delivered by the WES,
- Various other control and evaluation data (background noise, rain etc.),
- Rotational speed of the system.

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