When does wind make all the right noises?

Wind turbines: calculation of sound propagation, sound emission measurement, evaluation of sound emission measurements
Calculation of sound propagation, sound emission measurement and evaluation

We offer services and product solutions covering the entire wind turbine approval procedure, from noise impact prediction in the planning phase to acceptance measurement following the commissioning of a wind turbine. We develop our products based on our engineers’ valuable experiences. Being a member of FGW e.V. (Fördergesellschaft Windenergie, Association for the Promotion of Wind Power) and a measuring body according to Section 29b BImSchG (Federal Immission Control Act), we are dealing with these tasks every day. The continuous exchange between developers and engineers results in practical products and efficient service processing.

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In its latest 2016 version, the leading software product for the prediction of noise impact and air pollutants, IMMI, supports the calculation of the sound propagation of wind turbines (WT) even more efficiently.

- Tailored to suit wind turbines: WT element for calculating sound propagation and easily selecting current calculation methods (general and simplified method according to ISO 9613-2 as well as interim method)

- Optimized wind turbine presentation in the terrain model: 2D and 3D display of WT objects

- Efficient: databases for managing wind turbine emission data

- Quality assurance: the software meets the requirements of DIN 45687

- Realistic preload presentation: design of point, line and area sound sources

- Flexible: import and export of data in various formats

- Versatile: input of emission data as sum level, third-octave level and octave level, both A-weighted and linear

- And many more …
RoBin is a system for measuring sound emissions of wind turbines according to IEC 61400-11, edition 2.1 and edition 3/FGW directive TR1. The main component of the wireless one-man measuring system, RoBin, is a sound level meter which registers noise through a double shielded outside microphone. The operating parameters of the system are recorded by a versatile data logger featuring six configurable analog interfaces, an USB port and a fieldbus port. Meteorological data are recorded by meteorology sensors of the accuracy class required.

- **Practical:** wireless data transmission, no cables that have to be laid across long distances, measurement under live conditions

- **Compact:** accessories in practical robust cases

- **Flexible:** various interfaces for data recording

- **Accurate:** calibratable class 1 sound level meter

- **Convenient:** remote radio operation to mark background noise, live check of measured values

Data are transmitted through WIFI/AN connection. Energy supply is ensured by powerful maintenance-free LiFePO4 batteries. A remote radio control serves to mark the status during measurement (total or external noise) and identify background noise. Sound levels are classified automatically in real time and according to standardized wind speed. The measurement can be conveniently remote-controlled via tablet PC, even simultaneously for several systems if necessary.
Our sound analysis software, RoBin.Post, that has specifically been developed to assume wind power tasks is used to evaluate the data required for sound power calculation. In RoBin.Post, the user can edit data directly recorded with RoBin or any other measured data. Data are evaluated according to latest standards, such as IEC 61400-11 and FGW TR1 (editions 2.1 and 3), simply by pushing a button. Immediately after the measurement, reports are output automatically which makes the process particularly efficient.

At present, RoBin.Post participates in the FGW TR3 ring robin test for evaluation according to IEC 61400-11 Ed. 3.

You can now determine your own jigsaw puzzle. All presented pieces of the jigsaw puzzle are included in a product or service offer. You choose the piece precisely in the shape you need.

Being an independent test laboratory recognized by FGW e.V. (Fördergesellschaft Windenergie, Association for the Promotion of Wind Power), we perform sound emission and acceptance measurements according to IEC 61400-11 and the FGW directive. Noise impact protection is mainly concerned with issues of the propagation of sound outdoors. The objective of noise impact protection is to keep limit values (TA Lärm) so as to protect the general public. This also includes operation of a wind turbine.

In the development planning phase and the approval procedure for your wind turbine, our engineers process all tasks relating to noise impact protection. They turn their particular attention to preparing professional opinions on noise impact predictions using INWI, the software developed by Wölfel that is used to calculate noise and other impact types.
Vibrations, structural mechanics and acoustics – this is the Wölfel world. Here we are experts, this world is our home. More than 90 employees daily do their best for complete satisfaction of our customers. For more than four decades we support our customers with engineering services and products for the analysis, prognosis and solution of tasks in the fields of vibrations and noise.

Are vibrations really everywhere? Yes! That’s why we need a wide variety of solutions! Whether it is engineering services, products or software – there is a specific Wölfel solution to every vibration or noise problem, for example

- simulation-based seismic design of plants and power stations
- measurement of acoustic emissions of wind turbines
- universal measuring systems for sound and vibrations
- expert reports on noise immission control and air pollution forecasts
- dynamic occupant simulations for the automotive and aviation industry
- and many other industry-specific Wölfel solutions …