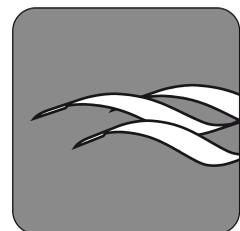
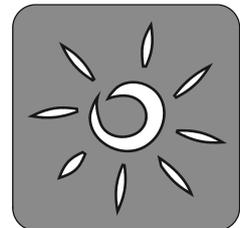
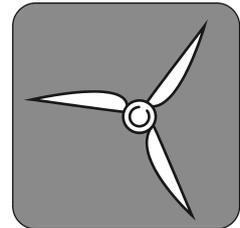


Technical Guidelines for Wind Turbines

PART 2 (TG 2)

**Determination of Power Performance and
Standardised Energy Yields**

Revision 16
Dated 2016-04-01



Published by
FGW e.V.
Fördergesellschaft Windenergie
und andere Erneuerbare Energien

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There is no distinction between genders so that the text is easier to read. The corresponding terms apply in principle to both genders within the meaning of equality.

Following Parts of FGW Technical Guidelines are available:

Part 1: Determination of Noise Emission Values

Part 2: Determination of Power Curves and Standardised Energy Yields

Part 3: Determination of the Electrical Characteristics of Power Generating Units and Systems in MV, HV and Highest Voltage Grids

Part 4: Demands on Modelling and Validating Simulation Models of the Electrical Characteristics of Power Generating Units and Systems

Part 5: Determination and Application of Reference Yield

Part 6: Determination of Wind Potential and Energy Yield

Part 7: Operation and maintenance of power plants for renewable energy

Category A: Miscellaneous section

Category B3: specialist application notes for monitoring and testing foundations and supporting structures for wind turbines

Category D2: State-Event-Cause code for Power Generating Units (ZEUS)

Category D3: Global Service Protocol (GSP)

Category D3 – Annex A: XML-schema documentation

Part 8: Certification of the Electrical Characteristics of Power Generating Units and Systems in the Medium-, High- and Highest-voltage Grids

Part 9: Determination of High Frequency Emissions from Renewable Power Generating Units

Foreword

The development of these Technical Guidelines for Wind Turbines (also known, since 1998, as FGW Guidelines) began in 1992 with the objective of presenting measuring methods allowing determination of reliable and comparable data for wind turbines (WTs) based on state-of-the-art technology. The measurements from these three fields - power curve, noise emissions and electrical properties - should serve as the foundation for assessment of WTs, e.g. in permit issues, when assessing grid connection options or for reliable yield calculations.

In the meantime, the individual Technical Guidelines and the test reports compiled by independent measuring institutes are widely recognised in their fields. Power curves form the basis for purchase agreements and finance commitments, measured noise emission values are adopted both for sales contracts and are used in the course of approval procedures.

Compilation of the guidelines

The contents of the Technical Guidelines are the responsibility of the respective technical committees and working groups.

This guideline is an English translation of a prior German version. In any case of distinction between both revisions of TR 2 the German version is valid.

The following bodies were involved in the compilation of this Guideline by the working groups: independent measuring institutes, coastal federal states (*Länder*) and emission protection agencies in the Federal Republic of Germany, manufacturers of WTs and their components, electricity providers, institutes and universities, engineering consultancies, the German Electricity Association (*Vereinigung Deutscher Elektrizitätswerke e.V. (VDEW)*) and FGW e.V. - *Fördergesellschaft Windenergie und andere Erneuerbare Energien*.

Measurements and their recognition

Measurements in accordance with the Technical Guidelines can be carried out by all qualified measuring institutes. A test report covering the measurements must be compiled; the principal results can be summarised in a test report excerpt applying the specifications provided in this Guideline (FGW master data sheet).

However it should be noted that over and above the specifications described in these Technical Guidelines, the agency requested to recognise the measurements may place further demands on the measuring institute. WT measurement certifiers operating to DIN EN ISO/IEC 17025, for example, require a measuring institute to be accredited.

FGW conformity

Independent measuring institutes can emphasise the quality of their work by the use of a conformity seal. The seal is applied at the bottom of the test report (or excerpt from the test report). After supplying a proof of certain quality characteristics, independent measuring institutes can apply for an entitlement to use the conformity seal. These quality characteristics are published on the FGW website.

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