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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 22516-2015

Replacing GB/T 22516-2008

**Wind turbine generators systems -- Acoustic noise
measurement techniques**

风力发电机组 噪声测量方法

(English Translation)

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules.

This standard replaces GB/T 22516-2008 "wind turbine noise measurement method."

Compared with GB/T 22516-2008 Main to technical changes are as follows.

- Change the wind speed measurement should cover the scope of the provisions (see Chapter 5, Chapter 5, 2008 edition);
- Changed the provisions for the measurement period and measuring the amount of data required (see 7.2.2, 2008 version 7.2.1);
- Changed pursuant to a power curve to determine wind speed, the effective range of the power curve provisions (see Version 8.2.1.1, 2008 7.3.1.1);
- Changed when using the nacelle anemometer to determine wind speed, the correction method of the nacelle anemometer measurements (see edition 8.2.1.2, 2008 7.3.1.1.1);
- Analytical methods sound power level and one-third octave band and uncertainty assessment methods to make a major adjustment (see 9.1 to 9.4,

2008 Version 8.5);

--- Remove the 2008 version of Appendix B "recording/playback device requirements," adds four appendices, including the Appendix D "surface roughness length Degree ", Appendix E" secondary windshield Features ", Appendix F" small wind turbine "and Appendix G" air sound absorption. " the use of translation method is equivalent to using the standard IEC 61400-11:2012 "Part 11 wind turbines. noise measurement methods" (English Version).

Correspondence between the consistency of the standards of international documents and normative references of the following documents.

--- GB/T 3241-2010 electro-acoustics octave and fractional octave filters (IEC 61260:1995, Electroacoustics-Octave-bandandfractional-octave-bandfilters, MOD)

--- GB/T 3785.1-2010 Electric Acoustic Sound Level Meters Part 1. Specification (IEC 61672-1:2002 Electroacoustics-Sound level meters-Part 1. Specifications, IDT)

--- GB/T 3785.2-2010 electrical acoustic sound level meters - Part 2. Type evaluation tests (IEC 61672-2:2003 Acoustic Learn the sound level meter Part 2. Type evaluation tests, IDT) for ease of use, this standard made the following editorial changes.

a) remove the reference normative documents IEC 61400-12-2 footnote. "To be published".

The standard proposed by China Machinery Industry Federation.

This standard by the National Standardization Technical Committee on mechanical wind (SAC/TC50) centralized.

This standard was drafted. China Electric Power Research Institute, Chinese Academy of Sciences Institute of Acoustics, Chinese Academy of Sciences Shanghai Institute for Advanced Study, East Electric Group, Dongfang Steam Turbine Co., Ltd., Guodian United Power Technology Co., Ltd., the national wind power equipment Quality Supervision and Inspection Center (Jiang the Soviet Union) and the like.

Introduction

The purpose of this standard is to provide a unified approach to ensure the consistency of wind turbine sound radiation testing and analysis, accuracy and Repeatability. This standard applies to.

- wind turbine manufacturer, to meet defined noise emission requirements and/or possible reporting standards (such as.

IEC/T S61400-14 wind turbine nominal apparent sound power level and sound value);

- wind turbine purchaser to clarify noise requirements;

- wind turbine operators for new or repaired wind turbines, can validate specifications for noise Regulations or requirements;

- wind turbine planning parties and regulators, must be accurate and fair evaluation of noise radiation characteristics of the wind turbine, so that new or it means improved compliance with environmental regulations or licensing criteria.

The standard measurement of radiation in the wind turbine noise, analysis and report writing to provide guidance. It will involve wind turbines Group manufacture, installation of the parties, planning, licensing, operation, use and control of the benefit. The standard recommended test and analysis techniques suitable for the above Parties, in order to ensure consistency and accuracy of wind turbine development and operation technologies. Based measurement and reporting standards given in the preparation of this Program can get accurate results that others can duplicate.

Wind turbine noise measurement method

1 Scope

This standard provides a measurement procedures to characterize the wind turbine noise emission characteristics. Measurement procedures, including attachments in wind turbines Near the measurement method for evaluating a position suitable for measuring noise emissions, in order to avoid errors caused by sound propagation, while ensuring a sound source with respect to the limited size Measuring distance far enough. This standard gives measurement procedures, and in some respects environmental noise studies used different procedures, they in the range of variation in wind speed and direction must describe the noise characteristics of the wind turbine. Standardized measurement procedure also facilitates different wind A comparison between the performance of the generator set.

Measurement procedure provides a consistent method for accurately measuring single wind turbines noise radiation characteristics. Measuring program comprising.

- positioning acoustic measurement position;
- acoustics, meteorology and wind turbine operation related data collection requirements;
- , the content of the test report on the analysis of the data collected;
- define the specific parameters of noise emissions, as well as the definition of relevant terms when used in environmental assessment.

This standard is not limited to a specific capacity or type of wind turbine. Procedures given in this standard can be used comprehensively Description of wind turbine noise emissions. For the measurement of small wind turbine is described in Appendix F.

2 Normative references

The following documents for the application of this document is essential, all dated references, only the dated version suitable for use herein Member. Anyone who does not

dated reference documents, the latest edition (including any amendments) applies to this document.

GB/T 15173-2010 electric acoustic sound calibrator (IEC 60942:2003, Electroacoustics-Soundcalibrators, IDT) GB/T 18451.2-2012 wind turbine power performance testing (IEC 61400-12-1:2005, Windturbines-Part 12-1. Powerperformancemeasurementssofelectricityproducingwindturbines, IDT) IEC 60688 AC power is converted to an analog or digital electrical signal measuring transducers (Electricalmeasuringtransducers forconvertinga.c.electricalquantitiestoanalogueordigitalsignals) IEC 61260:1995 electric acoustic octave and fractional octave filters (Electroacoustics-Octave-bandandfrac-tional-octave-bandfilters) Verify IEC 61400-12-2 wind turbine wind generator power characteristic (Windturbines-Part 12-2. Power performanceverificationofelectricityproducingwindturbines) IEC 61672 (all parts), electric acoustic sound level meter (Electroacoustics-Soundlevelmeters) Uncertainty of ISO/IEC Guide 98-3 measurement - Part 3. Measurement Uncertainty Guide to the expression (GUM.1995) [Uncertaintyofmeasurement-Part 3. Guidetotheexpressionofuncertaintyinmeasurement (GUM. 1995)]

3 Terms and Definitions

The following terms and definitions apply to this document.