ICS 27.180
CCS F 11

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 19073-2018

Wind turbine -- Design requirements for gearbox

Issued on: February 6, 2018 **Implemented on: September 1, 2018**

Issued by: State Administration for Market Regulation, China National Standardization Administration

Table of Contents

Foreword

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

This standard replaces GB/T 19073-2008 "Wind Generator Gearbox", compared with GB/T 19073-2008, the main technology

The differences are as follows.

---Modified standard name;

--- Normative references have been added to the referenced ISO and DIN standards (see Chapter 2);

--- Add "terms and definitions, conventions" (see Chapter 3);

--- Add "symbols and abbreviations" (see Chapter 4);

--- Increase the "reliability design" (see Chapter 5);

--- Increase "transmission chain operating conditions and loads" (see Chapter 6);

--- "Design verification" instead of "test methods and inspection rules" (see Chapter 8, Chapter 4 of the.2008 edition);

--- "Operation, service and maintenance requirements" instead of "the installation and use of the gearbox in the unit" "marks, instructions for use" and "packaging, transport

Loss and storage" (see Chapter 9, Chapter 5, Chapter 7 of the.2008 edition);

--- "Example of transmission chain interface and load specification" instead of "Guidelines for strength assessment of main parts of gearbox" (see Appendix A,.2008 edition)

Appendix A);

--- "Considerations in the design and manufacture of gearboxes" instead of "lubrication and monitoring" (see Appendix B, Appendix B of the.2008 edition);

--- "Bearing selection considerations" instead of "bearing selection and configuration form" and "bearing stress calculation" (see Appendix C,.2008 edition)

Appendix C);

--- "Notes on the design of the gearbox structural components" instead of "bearing stress calculation" (see Appendix D, Appendix D of the.2008 edition);

--- "Wind generators recommendations on the performance of wind turbine gearbox lubricants" instead of "quality assurance" (see Appendix E,.2008)

Appendix E);

---Add "design certification documents" (see Appendix F);

--- Increase the "bearing calculation file" (see Appendix G).

This standard uses the translation method equivalent to IEC 61400-4.2012 "Wind Generator Section 4. Gearbox Design Requirements" (English)

Version).

The documents of our country that have a consistent correspondence with the international documents referenced in this standard are as follows.

---GB/T 3505-2009 Product Geometry Specifications (GPS) Surface structure profiling terms, definitions and surface structures

Parameters (ISO 4287.1997, IDT)

---GB/T 4662-2012 Rolling bearing rated static load (ISO 76.2006, IDT)

---GB/T 6379.2-2004 Accuracy of measurement methods and results (accuracy and precision) Part 2. Determination of standard

Basic method of repeatability and reproducibility of quantity methods (ISO 5725-2.1994, IDT)

GB/T 6404.1-2005 - Acceptance specification for gear units - Part 1. Test specification for airborne noise (ISO 8579-

1.2002, IDT)

--- GB /Z 6413.1-2003 Calculation method for gluing load capacity of cylindrical gears, bevel gears and hypoid gears - Part 1.

Flash temperature method (ISO /T R13989-1.2000, IDT)

--- GB /Z 6413.2-2003 Calculation method for gluing load capacity of cylindrical gears, bevel gears and hypoid gears - Part 2.

Integral temperature method (ISO /T R13989-2.2000, IDT)

--- GB/T 10095.1-2008 Precision of cylindrical gears - Part 1. Definitions and permissible values

(ISO 1328-1.1995, IDT)

---GB/T 10610-2009 Product Geometry Technical Specification (GPS) Surface structure profiling method for assessing surface structure

And methods (ISO 4288.1996, IDT)

---GB/T 14039-2002 Hydraulic transmission oil solid particle pollution level code (ISO 4406.1999, MOD)

---GB/T 17879-1999 Surface tempering corrosion test after gear grinding (idtISO 14104.1995)

--- GB /Z 18620.3-2008 Specification for the implementation of cylindrical gears - Part 3. Gears, axial distance and axis parallelism

Inspection (ISO /T R10064-3.1996, IDT)

---GB /Z 19414-2003 Industrial closed gear transmission (ISO /T R13593.1999, IDT)

---GB /Z 25426-2010 Wind turbine generator load measurement (IEC /T S61400-13.2001, MOD)

---GB/T 31517-2015 Offshore wind turbine design requirements (IEC 61400-3.2009, IDT)

This standard has been edited as follows.

---Modified standard name;

--- Amend the missing reference standards ISO 10474, EN10204, ISO 8579-1 and ISO 8579-2 in Chapter 2.

This standard was proposed by the China Machinery Industry Federation.

This standard is under the jurisdiction of the National Wind Machinery Standardization Technical Committee (SAC/TC50).

This standard was drafted. Nanjing High Speed Gear Manufacturing Co., Ltd., Institute of Wind Energy Technology, Shenyang University of Technology, Chongqing Gearbox Co., Ltd.

Ren, Hangzhou Advance Gearbox Group Co., Ltd., Zhejiang Yunda Wind Power Co., Ltd., Dongfang Electric Wind Power Co., Ltd., Guodian

United Power Technology Co., Ltd., Gemei Wind Power (Tianjin) Co., Ltd.

1 Scope

This standard is applicable to closed speed-increasing gearboxes of horizontal shaft wind

turbine power trains with rated power greater than 500 kW. this

The standard applies to wind turbine gearboxes installed on land or at sea.

This standard provides guidance for load analysis of gear and gearbox components designed in wind turbines.

The gear parts to which this standard applies include. parallel shafts in the main drive chain and planetary gears, such as spur gears, helical gears or herringbone teeth.

wheel. This standard does not apply to gear power take-off devices (PTO).

This standard is based on the design of a gearbox using rolling bearings. The use of plain bearings allows reference to this standard, but this standard does not include slippage.

Evaluation of the use of moving bearings.

This standard also provides engineering guidance for shaft, shaft and hub interfaces, bearings and gearbox housing structures in a fully integrated design.

Its poor operating conditions.

In addition to type testing and product testing, this standard also includes lubrication of the transmission. Finally, this standard also applies to the operation of the gearbox.

Maintenance provides guidance.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 3480.5-2008 Calculation of load capacity of spur and helical gears - Part 5. Strength and mass of materials (ISO 6336-5.

2003, IDT)

GB/T 6391-2010 Dynamic load ratings and rating life of rolling bearings (ISO 281.2007, IDT)

GB/T 18451.1-2012 Wind turbine design requirements (IEC 61400-1.2005, IDT)

GB/T 19936.1-2005 Gears FZG test procedures - Part 1. s.

Act A/8.3/90 (ISO 14635-1.2000, IDT)

GB/T 24611-2009 Rolling bearing damage and failure terminology, characteristics and causes (ISO 15243.2004, IDT)