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

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**Rolling bearings - Yaw and pitch bearings for wind turbine
generators**

滚动轴承 风力发电机组偏航、变桨轴承

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. The standard proposed by China Machinery Industry Federation. This standard by the National Standardization Technical Committee of Rolling (SAC/TC98) centralized. This standard is mainly drafted by: Luoyang LYC Bearing Co., Ltd. Participated in the drafting of this standard. Luoyang Bearing Research Institute Co., Ltd., Chengdu Tianma Railway Bearing Co., Ltd., Dalian Metallurgical Bearing Shares Co., Ltd. Maanshan Jingwei slewing ring, Beijing Jingye Rolling Mill Bearing Manufacturing Co., Northwest Bearing Co., tile Room Shop Bearing Group Co., Ltd., Haifei race Bearing Technology Co., Guodian United Power Technology Co., Ltd. The main drafters of this standard. Donghan Jie, Pangbi Tao, practiced loose Wei, Xie Xing Hui, Xu Lingling, Michael. Participate drafters of this standard. Xu positive root Wang Wenge, Zhang Hongwei, Wang Shujun, Zhang Fuyong, Wang Lijun, ROCKETS, Zhao Lian spring, Sun Lixiang, Wen Chuan Tao, Yang Shihong. Rolling wind turbine yaw, pitch bearing

1 Scope

China's national standard for the yaw and pitch bearings of wind turbine generators. It specifies the designation method, the structure types, the dimensions, the technical requirements, the test methods, the inspection rules and the marking and packaging of those bearings. Yaw and pitch bearings are large slewing bearings, and they do a job that almost no other rolling bearing does: they carry an enormous load while barely rotating. The yaw bearing joins the nacelle to the tower and turns the whole machine to face the wind - a few degrees at a time, a few times an hour. The pitch bearings join each blade to the hub and rotate the blade about its own axis to control the power and to feather it in a storm - continuously, but through small angles, all day. Neither ever completes many revolutions,

and that changes everything about how the bearing behaves and how it fails. A bearing that rotates continuously distributes its load around the raceway and carries a lubricant film generated by the motion. A bearing that oscillates through a few degrees loads the same few rolling elements against the same few patches of raceway indefinitely, at very high contact stress, with no hydrodynamic film being generated. The failure mode that follows is false brinelling and fretting corrosion - wear at a contact that never moves far enough to renew its lubricant - and it is not what a bearing life calculation predicts. On top of that the bearing carries a very large overturning moment rather than a simple radial or axial load, it sits eighty metres up where replacement means a crane and a shutdown, and it is expected to last the twenty-year life of the turbine. So the standard specifies the structure types, the dimensions, the raceway hardness and hardening depth, the gear where one is integrated, the seals, the lubrication and the bolting. Issued on 18 September 2013 and in force since 1 June 2014.

This standard specifies the wind turbine yaw, pitch bearing code method, structure type, size, technical requirements, test methods, Inspection rules, signs and packaging. This standard applies to wind turbine yaw, pitch bearing (hereinafter referred to as bearing) production testing and user selection, acceptance.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 226-1991 steel macrostructure and defect etching test method

GB/T 230.1-2009 metallic materials - Rockwell hardness test - Part 1. Test methods (A, B, C, D, E, F, G, H, K, N, T scale)

GB/T 231.1-2009 metallic materials Brinell hardness test - Part 1. Test methods

GB/T 308.1-2013 Rolling Ball - Part 1. Ball

GB/T 1357-2008 general and heavy machinery cylindrical gear module

GB/T 1979-2001 structural steels times and defect Fig.

GB/T 4199-2003 Rolling defined tolerances Determination of depth after the

GB/T 5617-2005 steel induction hardening or flame hardening of effective case

GB/T 6394-2002 Determination of average grain size of metal

GB/T 6930-2002 Rolling Words

GB/T 7811-2007 Rolling Parameter Symbol

GB/T 8597-2013 Rolling rust-proof packaging

GB/T 9793-2012 thermal spraying of metals and other inorganic coatings - Zinc, aluminum and its alloys

3 Terms and Definitions

GB/T 4199-2003, terms and definitions GB/T 6930-2002 defined apply to this document.

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