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

GB/T 18451.1-2022

Wind energy generation systems-Design requirements

风力发电机组 设计要求

(English Translation)

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Foreword

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

This Standard uses translation method to identically adopt IEC 61400-1.2005

"Wind turbines - Part 1. Design requirements".

This Standard replaces GB 18451.1-2001 "Wind turbine generator systems - Safety requirements". Compared with GB 18451.1-2001, the main technical changes in this Standard are as follows.

- changed the standard's name to "Wind turbine generator systems - Design requirements";
- adjusted the classification method of wind turbines; now only reference wind speed and turbulence intensity are involved;
- expanded the turbulence model and included the limit turbulence model;
- adjusted and simplified the gust model;
- reorganized and revised the design load cases;
- emphasized the split turbulence simulation in the load calculation, and specified the extrapolation method of the limit load;
- adjusted and simplified the partial safety factor of the load;
- corrected the partial safety factor of the material; made the detailed description according to the material model and component class;
- according to the functional characteristics, revised and clarified the requirements of the control and protection system;
- added detailed evaluation requirements for structure and electrical compatibility.

The Chinese documents which have consistency with the international normative references in this Standard are as follows.

- GB/T 4797.1-2005, Environmental conditions appearing in nature of electric and electronic products - Temperature and humidity (IEC 60721-2-1.2002, MOD);

- GB/T 6391-2003, Rolling bearings - Dynamic load rating and rating life (ISO 281.1990, IDT); the current edition GB/T 6391-2010 has replaced GB/T 6391-2003;
- GB 5226.1- 2002, Safety of machinery - Electrical equipment of machines - Part 1.General requirements (IEC 60204-1.1997, IDT); the current edition GB 5226.1-2008 " Electrical safety of machinery - Electrical equipment of machines - Part 1.General requirement" has replaced GB 5226.1-2002;
- GB16895 (all parts), Low-voltage electrical installations [IEC 60364 (all parts)];
- GB/Z 25427-2010, Wind turbine generator systems - Lightning protection (IEC 61400-24.2002, MOD).

For easy use, this Standard made the following editorial modifications.

- a) changed "IEC 61400-1.2005" to this Standard;
- b) deleted the informative summary elements (including cover, table of contents and foreword) in IEC 61400-1.2005;
- c) kept the introduction of IEC 61400-1.2005 and added the "foreword" of this Standard;
- d) use the current IEC 60721-2-1.2002 "Classification of environmental conditions - Part 2-1.Environmental conditions appearing in nature - Temperature and humidity" to replace IEC 60721-2-1.1982;
- e) use the current ISO 4354.2009 "Wind actions on structures" to replace ISO 4354.1997;
- f) use the current ISO 9001.2008 "Quality management systems - Requirements" to replace ISO 9001.2000.

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of National Technical Committee on Wind Machinery of Standardization Administration of China (SAC/TC 50).