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PEOPLE'S REPUBLIC OF CHINA**

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**Wind turbine generator systems -- Lightning protection
(English Translation)**

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Table of Contents

Foreword
Introduction
1 Scope
2 Normative references
3 Terms and definitions
4 Lightning and wind turbine
5 Damage statistics
6 Risk Assessment of Damage to Wind Turbines by Lightning
Wind turbine blade lightning protection
8 Bearing and gearbox protection
Protection of electrical and control systems
10 Ground
11 Staff safety
12 Conclusions and recommendations for future work
Appendix A (Informative) Typical Lightning Damage Questionnaire
References

Foreword

GB/Z 25427 Guidance Technical Documentation Amendments to IEC TR61400-24:2002
"Wind Turbines Part 24. Lightning Protection "(English version).

This guidance document has been drafted in accordance with IEC TR61400-24:2002.

The guidance of technical documents is divided into 11 chapters an informative appendix.

Compared with IEC TR61400-24:2002, this Guidance Document has the following amendments.

--- The guidance of technical documents according to the provisions of GB/T 1.1, modify the scope of IEC TR61400-24:2002;

--- Added Chapter 2 normative references, some of the documents in the reference document is normative references, the other chapter serial number Postponed

--- The guidance of technical documents to delete the IEC 61024 series and IEC 61312 series of standards name and part of the standard Already by IEC/TC81 (Lightning Protection Standardization Technical Committee) to be replaced by IEC 62305 series of

standards, the guidance Technical documents related to IEC standards when the lightning protection by the current standard IEC 62305 equivalent into the national standard GB/T 21714 series of alternative;

--- Remove the original file 3.6.

--- Deleted the original document part of the table (as shown in Table 4), added some new tables as Table 8, modified part of the table symbols.

The part modified according to the requirements of GB/T 20000.2 is marked with a vertical single line on the outside of the items covered by these differences.

The following editorial changes have been made to IEC TR61400-24 for ease of use of this guidance document.

a) The foreword of IEC TR61400-24:2002 has been deleted, the introduction of IEC TR61400-24:2002 has been revised.

b) Replace "This Technical Report" with "This Guidance Technical Paper";

c) Use the decimal "." instead of the comma "," as a decimal point;

d) Added the preface to this guidance document.

This guidance document is proposed by China Machinery Industry Federation.

This guidance document is subject to the National Wind Machinery Standardization Technical Committee (SAC/TC50).

The main drafting of the guidance of technical documents. Machine Productivity Promotion Center, Chengdu Industrial Ryan Electronics Co., Ltd., Sichuan Zhongguanggao Branch Industry Development Group, Beijing Europe and the Security Technology Co., Ltd.

Introduction

In recent years, damage to wind turbines (wind turbine generators) due to lightning strikes has been recognized as a growing problem. Wind power the increase in the number of generator sets installed and the increase in installation height make them more damaging to lightning than expected repair costs.

The impact of lightning disasters on operational reliability is due to the increase of generating capacity of a single wind turbine and offshore construction of wind turbines from the people's attention. In particular, when several large wind turbines are operating at the same time in the wind farm, any lightning strike on these large winds Potential losses caused by the generator are unacceptable.

People can be targeted along the overhead lines, substations and power plants and other facilities installed above the protective conductor. But the wind turbine Different, due to the physical size of the wind turbine and the natural environment in which they are facing

different lightning protection issues. Typical wind turbine Group has 2 to 3 leaves, diameter up to 100m, leaf height above the ground when the rotation of more than 100m. In addition, large-scale use of wind turbines absolutely Edge composite materials, such as fiberglass reinforced plastic as a carrier. Lightning protection system must be combined with the different parts of the wind turbine as a whole, to ensure that various parts of the wind turbine may become a lightning strike point, they can safely withstand the impact of lightning and lightning current Conducted safely from the lightning strike point to the earth without unacceptable damage to the wind turbine without interfering with the operation of the systems.

This Guidance Document is intended for the design of wind turbine generator, purchaser, operator, certification body and installation department for the latest wind turbine lightning protection technology.

Wind turbine lightning protection

1 Scope

This Guidance Document sets out the statistics of the lightning damage to the wind turbine and the risk of the lightning damage to the wind turbine.

Estimation, blades, bearings, gearbox and lightning protection and electrical and control systems and grounding requirements and personnel safety.

This guideline is applicable to the lightning protection of horizontal axis wind turbines whose windward sweep area is greater than or equal to 200m² and other the type of wind turbine can also refer to the use.

2 Normative references

The following documents contain provisions which, through reference in this Guidance Document, become the provisions of this Guidance Note document. All dated Reference documents, all subsequent amendments (not including errata content), or revisions do not apply to this guidance document, however, drums Recipients of the agreement based on this guidance document are encouraged to study whether the latest versions of these documents are applicable. All undated references the latest version of this document applies to this guidance document.

GB/T 21714.1-2008 lightning protection Part 1. General (IEC 62305-1:2006, IDT) GB/T 21714.2-2008 lightning protection Part 2. Risk Management (IEC 62305-2:2006, IDT) GB/T 21714.3-2008 lightning protection Part 3. Physical damage to buildings and life-threatening (IEC 62305-3:2006, IDT) GB/T 21714.4-2008 lightning protection Part 4. Electrical and electronic systems within the building (IEC 62305-4:2006, IDT)

3 Terms and definitions

The following terms and definitions apply to this guidance document.

Acceptable number of lightning strikes (Nc) accepted lightning flash frequency (Nc)

Acceptable annual average number of lightning strikes that can cause damage to the building.

Pick and place system air terminations system Part of the external LPS intercepting Thunderbolt.

Bonding conductor Connect the conductors of each separate part of the equipment so that the potential between them is equal.

Lap busbar

Bus. Metal parts, power and communications cables and other cables through which LPS can be connected.

Dangerous discharge dangerous sparking Undesirable discharge phenomena caused by lightning current on the protected buildings.

Straight lightning strike on the building (Nd) direct lightning flash frequency to a structure (Nd)
Average number of lightning strikes per year expected on average in buildings.