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Guidelines for the design of interconnected power systems

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Foreword

This instructional document has been drafted in accordance with the rules given in GB/T 1.1-2009.

This Guidance Document is modified using the Redrafted Law using the IEC TR62511.2014 Interconnection Power System Design Guidelines.

The technical differences between this guidance document and IEC TR62511.2014 and their causes are as follows.

--- On the normative references, the guidance of technical documents made a technical adjustment to adapt to China's technical

The adjustments and adjustments are mainly reflected in Chapter 2, "Normative References," as follows.

* Equivalent to the use of international standards GB/T 14598.26 instead of IEC 60255-26.2013;

* increase the reference GB/T 26399;

* increase the reference GB/T 50065;

* Added reference to DL755-2001.

--- Removed the international standard chapter 1 is not suitable for China's national conditions management of the text description;

--- The "International Standard Chapter 1 and Chapter 4" is generally above 50kV "to" 110kV and above ";

--- Removed the "3.2 conveyable capacity" in Chapter 3 of the International Standard "3.5 Control Area" "3.7 Power System Components" 3.14.1

Fixed Load "" 3.14.2 Interruptible Load "" 3.15 Load shedding "" 3.17 Load current "" 3.18 Essential "" 3.20.2 Blackout

Overhaul "" 3.22 HVDC Terminal "" 3.24 Basic Components "" 3.31 Short Circuit "" 3.32 Significant adverse effect "

"3.33 Special protection system" "3.36 Transmission capacity" "3.36.1 Emergency transmission capacity" "3.37.1 Tier 1 transmission system"

"3.37.2 secondary transmission system" and other terms;

--- The fourth chapter of International Standards "special protection system" changed to "safety and stability control system" to suit China's national conditions and guide the use of;

--- 6.2 the stability of the international standard assessment content in accordance with GB/T 26399 and DL755-2001 provisions of the "safety and stability standards points

For the three levels "requirements to adapt to our national conditions, and guide the use of;

--- Paragraphs 5 and 7 of International Standard 7.3 will be deleted and the other will be "Relevant impact on the interconnected power system ... and vice versa

However, "to" parameter tuning should be carefully weighed the sensitivity of the protection system on the interconnected power system, you need to fully consider

Protection of system sensitivity and reliability of the relationship between "in order to relay protection system in our country consistent with the relevant provisions and to guide the use;

--- To suit our national conditions and to guide the use of the international standard 7.4 a), c) and e), 7.6 a) and h), 7.13 c), 7.16

, The contents of 7.20.1 d), 7.20.2 c) have been modified and the International Standard 7.4 deleted f), 7.16

g) and h), 7.20.1 e), 7.20.3 c) and notes.

The guidance of technical documents made the following editorial changes.

--- International Standard 6.5 in the "normal design should be considered fault .. more trend" paragraph delete;

--- International Standard 6.9 in the "proposed interconnection of the subsystems .. Assessment" was incorporated into the first paragraph, the "extreme accident assessment

It should also include .. Analysis of the tide before the accident "paragraph moved to the last paragraph of this section;

--- Removed the international standard 6.10 in b) (ie, adequate supply of natural gas).

Please note that some of this document may be patentable. The issuing agencies of this document do not bear the responsibility of identifying these patents.

This Guidance Document is proposed and managed by the National Technical Committee

for Voltage and Current Leveling and Frequency Standardization (SAC/TC1).

The drafting of the guidance of technical documents. State Grid Jiangsu Electric Power Company Electric Power Research Institute, Machine Productivity Promotion Center, Xi'an Bo

Yu Electric Co., Ltd., China Energy Construction Group Guangdong Electric Power Design Institute, China Railway Shanghai Design Institute Group Co., Ltd., Fujian Electric Network

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the company.

1 Scope

This guidance document defines the technical principles, modeling and evaluation, and design requirements for the interconnection of power systems.

This Guidance Document is applicable to the interconnection between 110kV and above power systems of different voltage levels. For other voltage levels, refer to

carried out.

The main purpose of this guidance document is to provide technical guidance for the planning and design of interconnected power systems to improve system reliability and safety

To reduce the adverse effects of independent operation after system disconnection.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article

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

GB/T 14598.26 Measuring relays and protection equipment - Part 26. Electromagnetic compatibility requirements (GB/T 14598.26-2015,

IEC 60255-26.2013, IDT)

Technical guidelines for control of power system safety and stability GB/T

GB/T 50065 AC electrical installations grounding design specifications

Power system security and stability guidelines

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Adequacy (ofanelectricpowersystem)

Within the system component rating, the bus voltage and system frequency are kept within allowable limits, taking into account planned and unplanned outages

When the power system in steady-state conditions to provide users with all the necessary power and capacity.

Note. This ability can be measured using one or more suitable indicators.

[GB/T 2900.13-2008, Definition 191-21-01]

3.2

Unit maximum capacity maximumcapacityofaunit

Power unit When all the components of the unit are in normal working condition, the maximum power that may be emitted in continuous operation.

Note. This power can be total output power and can be net output power.

[GB/T 2900.52-2008, Definition 602-03-08]

3.3

Contingency

Usually includes one or more component failure, and at least an instantaneous impact on the interconnected power system events.

3.4

Demand demand

The magnitude of the electricity supply in kilowatts or kVA.