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Electromagnetic compatibility. Limits. Assessment of emission limits for the connection of unbalanced installations to MV, HV and EHV power systems

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Foreword

The "Electromagnetic Compatibility Limits" is divided into the following parts.

---GB 17625.1-2012 electromagnetic compatibility limit harmonic current emission limit (equipment input current per phase <= 16A);

---GB/T 17625.2-2007 The electromagnetic compatibility limit is for the equipment with rated current <= 16A per phase and unconditional access in public

Restrictions on voltage changes, voltage fluctuations and flicker generated in low-voltage power supply systems;

---GB /Z 17625.3-2000 Electromagnetic compatibility limit is used for equipment with rated current greater than 16A in low-voltage power supply system

Voltage fluctuations and flicker limits;

---GB /Z 17625.4-2000 Electromagnetic Compatibility Limits Evaluation of Distortion Load Emission Limits in Medium and High Voltage Power Systems;

---GB /Z 17625.5-2000 Electromagnetic Compatibility Limits Evaluation of emission limits for fluctuating loads in medium and high voltage power systems;

---GB /Z 17625.6-2003 Electromagnetic compatibility limit for equipment with a rated current greater than 16A in the low-voltage power supply system

The limit of the generated harmonic current;

---GB/T 17625.7-2013 The electromagnetic compatibility limit is limited to equipment with a

rated current <=75A and conditional access in the public low

Limitations of voltage changes, voltage fluctuations and flicker generated in the voltage power supply system;

---GB/T 17625.8-2015 Electromagnetic compatibility limit The input current per phase is greater than 16A and less than or equal to 75A.

Harmonic current limits generated by equipment in low-voltage systems;

---GB/T 17625.9-2016 Electromagnetic compatibility limit Signal transmission emission level, frequency band and electromagnetic

Harassment level;

Evaluation of the emission limit;

---GB /Z 17625.14-2017 Harmonic, interharmonic and voltage of electromagnetic compatibility limit disturbance device connected to low-voltage power system

Evaluation of fluctuating and unbalanced emission limits;

---GB /Z 17625.15-2017 Electromagnetic compatibility limit low-frequency electromagnetic immunity and power generation of distributed generation systems in low-voltage power grids

Evaluation of shooting requirements.

This part is part 13 of "Electromagnetic Compatibility Limits".

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

The translation method used in this part is equivalent to the IEC /T R61000-3-13.2008 "Electromagnetic Compatibility (EMC) Part 3-13.Limits

Evaluation of Emission Limits for Unbalanced Facilities Entering Medium Voltage, High Voltage, and Extra High Voltage Power Systems.

The Chinese documents that have a consistent correspondence with the international documents cited in this section are as follows.

---GB/T 4365-2003 Electrotechnical terminology electromagnetic compatibility [IEC 60050(161).1990, IDT].

This section has made the following editorial changes.

---In order to be consistent with the existing standard series, the standard name is revised to "Electromagnetic Compatibility Limits Access to Medium Voltage, High Voltage, and Extra High Voltage Power Systems

Evaluation of emission limits for unbalanced facilities;

---Incorporate the technical errata of the international standard IEC /T R61000-3-13.2008/Cor.1.2010, and use the vertical double line (||)

Marked in the margins of the terms they refer to.

This part is proposed and managed by the National Electromagnetic Compatibility Standardization Technical Committee (SAC/TC246).

Drafting organizations of this section. China Electric Power Research Institute Co., Ltd., China Southern Power Grid Co., Ltd. EHV Transmission Company Overhaul

Test Center, State Grid Corporation of China.

1 Scope

This part of the "Electromagnetic Compatibility Limits" is for unbalanced facilities (that is, three-phase facilities that cause voltage imbalance) to connect to public medium voltage, high voltage, and ultra

The basic requirements of high-voltage power systems (low-voltage facilities will be regulated in other national standard documents) provide a guiding principle. Imbalance in this section

Facility refers to a three-phase facility (which can be a load or power generation equipment) that causes an unbalanced system voltage. No access specifically for single-phase facilities

Explain, because the access of such facilities is controlled by the system operator or owner. But when considering the access of single-phase facilities, these general

The principles can also be applied. The main goal of this part is to guide the engineering practice of system operators or owners, so as to provide all connected users with

Sufficient quality of service. But when it comes to facilities, this section is not intended to replace the emission limit standards for equipment.

This part focuses on the capacity allocation of the system to absorb disturbance; it does not involve how to alleviate the disturbance and how to expand the capacity of the system.

Since the criteria highlighted in this section are based on certain necessary simplifications and assumptions, there is no guarantee that this method will be effective for all injustices.

Balance the load to provide the best solution. In terms of engineering, it is advisable to flexibly use and evaluate the recommended recommendations in all or part of the evaluation procedures.

method.

When facilities are connected to the system and may cause system imbalance, the system operator or owner is responsible for putting forward regulatory requirements. Usually show

Disturbance facilities are understood as the user's complete facilities (that is, including balanced and unbalanced parts).

The imbalances involved are basically divided into two categories.

* Unbalanced facilities that absorb negative sequence current and generate negative sequence voltage in the power supply system. Such typical facilities include electric arc furnaces, electric

Locomotives (usually connected to the public high-voltage power grid), and various unbalanced three-phase facilities (usually connected to the medium-voltage or low-voltage power grid).

The negative sequence voltage is superimposed on the terminal voltage of the rotating machine, which will generate additional heat loss. Negative sequence voltage will also cause the converter equipment to produce

Generate non-characteristic harmonics (usually the third harmonic in the positive sequence).

* Connected to unbalanced facilities with neutral line system can also absorb zero sequence current. According to the wiring type of the power transformer, zero sequence

The current may or may not be transferred to the power supply system. The zero sequence current flowing in the neutral grounded system will

A zero sequence unbalanced voltage is generated in the phase voltage. Usually it is not by setting the emission limit to control the zero sequence unbalanced voltage,

It is controlled through system design and maintenance. The neutral point is not grounded, or the facilities connected between the phases are not affected by this

The influence of similar zero sequence unbalanced voltage.

This section only provides guidance on how to coordinate the negative sequence voltage between different voltage levels to meet the compatibility level of the power point. Not right

The zero sequence voltage imbalance limits the compatibility level. Compared with the negative sequence voltage imbalance, it is generally considered that the zero sequence voltage imbalance is between different voltage levels.

Inter-coordination is irrelevant. But for the case where the neutral point is effectively grounded via impedance (that is, the ratio of the zero sequence reactance X0 to the positive sequence reactance X1 satisfies 0<

X0/X1<=3), pay attention to this kind of voltage imbalance, especially when the connection method of the transformer allows the zero sequence component to penetrate between the medium voltage and the low voltage.