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

GB/T 35702.1-2017

**Power losses in voltage sourced converter (VSC) valves for
high-voltage direct current (HVDC) systems -- Part 1: General
requirements**

(English Translation)

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References

Foreword

GB/T 35702 "HVDC system voltage source converter valve loss" is divided into the following two parts.

- Part 1. General requirements;
- Part 2. Modular multi-level converter.

This section GB/T 35702 Part 1.

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

This section uses the translation method is equivalent to using IEC 62751-1:2014 "high voltage DC system voltage source converter valve loss Part 1.

General requirements".

The documents of our country that are consistent with the corresponding international documents that are normative references in this section are as follows.

- GB/T 4023-2015 Semiconductor devices and discrete components and integrated circuits - Part 2. Rectifier diodes (IEC 60747-2:2000, IDT);
- GB/T 13498-2017 HVDC terms (IEC 60633:2015, MOD).

This section made the following editorial changes.

- According to our habit of the text "R0" changed to "r0" (see 5.2 ~ 5.3).

This part is proposed by China Electrical Equipment Industry Association.

This part of the National Power Electronic Systems and Equipment Standardization Technical Committee (SAC/TC60) centralized.

This section drafted unit. Xi'an West Power System Co., Ltd., Xi'an Institute of High Voltage Electric Co., Ltd., State Grid Beijing economy Technology Research Institute, China Southern Power Grid Research Institute Co., Ltd., Global Energy Internet Institute, Monternet Rongxin Technology Group Co., Ltd.

Company, China Southern Power Grid Co., Ltd. EHV Transmission and Maintenance Testing Center.

1 Scope

This section GB/T 35702 gives the voltage source converter (VSC) in high voltage direct current (HVDC) converter power loss the general principle of calculation, which has nothing

to do with the topology of the converter. This section Chapter 6, Chapter 8, 9.1, 9.2 and A.2.12 also applies the dynamic brake valve (when used) is calculated for power loss and is calculated as the valve's power loss in a STATCOM guide.

Except for the converter valve, the power loss of other equipment in the HVDC converter station is beyond the scope of this standard. Most VSC converter station Power Loss Calculation of Several Devices and Calculation Rule of Losses in HVDC Systems Using Line Commutation Converters (LCC) in IEC 61803 similar. For methods that affect the determination of the power loss of other equipment, Appendix A gives the LCCHVDC converter station and VSCHVDC the main difference between converter stations.

This section does not apply to the commutation converter in the HVDC system commutation converter.

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 29332-2012 Discretes semiconductor devices Part 9. Insulated Gate Bipolar Transistors (IGBT) (IEC 60747-9:2007, IDT) GB/T 34118-2017 voltage source converter for high voltage direct current system terminology (IEC 62747:2014, IDT) IEC 60633 HVDC Terminology for high-voltage direct current (HVDC) transmission IEC 60747-2 Semiconductor devices - Discretes and integrated circuits - Part 2. Rectifier diodes devices-Discrete devices and integrated circuits-Part 2: Rectifier diodes)

3 Terms and definitions

GB/T 34118-2017, GB/T 29332-2012, IEC 60633 and IEC 60747-2 as defined by the following terms and definitions Applies to this document.

Note 1: Related terms and definitions can be found in other relevant sections of IEC/T R62543, IEC 62751-2 and IEC 60747.

Note 2: In this section, the term "insulated gate bipolar transistor" is used to indicate that the semiconductor device can be turned off. Therefore, this section also applies to such as GTO, IGCT, ETO, IEGT and other types of turn-off semiconductor devices.

3.1 Converter Type

3.1.1

Two-level converter 2-level converter the voltage between the AC terminal of the voltage source converter unit and the midpoint of the voltage source converter unit is between two independent DC voltage levels Switching between the converter.

Note: The midpoint of the VSC cell is defined in 3.5.9.