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

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**Measurement method of DC magnetic field from high voltage
DC transmission project**

高压直流输电工程直流磁场测量方法

(English Translation)

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Foreword

This standard was proposed by the Standardization Management Center of the China Electricity Council.

This standard is under the jurisdiction and interpretation of the National Electromagnetic Compatibility Standardization Technical Committee (SAC/TC 246).

The units responsible for drafting this standard. China Electric Power Research Institute Co., Ltd., State Grid Co., Ltd., State Grid Shandong Electric Power Company Institute of Force Sciences.

1 Scope

This standard specifies the measurement method for the DC magnetic field of HVDC transmission projects.

This standard is applicable to the measurement of DC magnetic field in HVDC transmission projects.

2 Terms and definitions

The following terms and definitions apply to this document.

DC magnetic field

The magnetic field generated by the direct current in the conductor is called the direct current magnetic field, usually the magnetic induction intensity (unit is T) or the magnetic field intensity (single the position is A/m). In the air medium, 1 μ T is equivalent to 0.8A/m.

3 Measuring instruments

Special probes or magnetic field measuring instruments for DC magnetic field measurement applications. The probe of the measuring instrument can be three-dimensional or one-dimensional, and three-dimensional is preferred.

The DC magnetic field measuring instrument should be able to identify the size and direction of the DC magnetic field.

The measuring instrument must be within the validity period of the calibration.

4.1 General requirements

The DC magnetic field is generally measured at a height not exceeding 1.5m from the ground.

When the DC magnetic field measuring instrument adopts a one-dimensional probe, it should measure the three orthogonal components of the DC magnetic field and calculate the combined quantity.

4.2.1 DC magnetic field measurement under transmission lines

When measuring the DC magnetic field of a DC transmission line, the measurement location should be selected on an open ground with a flat terrain and no other obstacles.

The DC magnetic field measurement of the cross section under the DC transmission line should be selected at the lowest position of the central sag of the pole wire span, as shown in Figure 1. When measuring two the distance between adjacent measuring points is generally 5m, but when measuring the maximum value, the points should be densely distributed. The DC magnetic field under the transmission line is generally measured to the distance side guide Just 50m away from the line-to-ground projection.

Figure 1 Schematic diagram of DC magnetic field measurement in the cross section below the DC transmission line

4.2.2 DC magnetic field measurement at other locations near the DC transmission line

DC magnetic field measurement points in other locations near the DC transmission line should be placed on the line side closest to the pole conductor of the line, and the distance between the measurement points and the measured the outside of the object is not less than 1m.

4.2.3 DC magnetic field measurement of DC cable

When measuring the DC magnetic field of a DC cable, the measurement location should be selected on an open ground with a flat terrain and no other obstacles.

The DC magnetic field measurement of the cross section of the DC cable should be placed on both sides of the cable trench where the DC cable is located, starting from the center of the cable trench.

At this time, the distance between two adjacent measuring points is generally 5m, but when measuring the maximum value, the points should be densely distributed, generally measuring 50m outside the cable trench.

The measuring points of the DC magnetic field at other positions of the DC cable should be arranged on the closest side to the DC cable, and the distance between the measuring point and the outside of the measured object shall not be less than 1m.

4.3.1 DC magnetic field measurement in converter station

The DC magnetic field measurement points in the converter station should be located in the patrol walkway, under the DC bus bar and other locations on the DC side of the converter station. Measuring point the distance from the outside of the station facilities is not less than 1m.

4.3.2 DC magnetic field measurement outside the converter station

DC magnetic field measurement outside the converter station. Arrange points outside the enclosure wall of the converter station, and the measurement point is 5m away from the enclosure wall, and the incoming and outgoing lines should be avoided.

Cross-sectional measurement of DC magnetic field outside the converter station. the measuring point should be arranged on the side with no other obstacles and the larger DC magnetic field, 5m outside the wall as the starting point, the distance between two adjacent measuring points is generally 5m, measured to 50m outside the wall, or determined according to the terrain.

4.3.3 Measurement of DC magnetic field at other locations outside the converter station

The measurement points of the DC magnetic field at other locations outside the converter station should be arranged on the closest side to the converter station, and the distance from the measurement point to the outside of the measured object is not less than 1m.

5 Measurement records and data processing

In DC magnetic field measurement, each measurement point is generally measured no less than 5 times, and the measurement results are averaged.

When measuring the line, the line parameters of the pole wire at the measuring point or the measuring path should be recorded, including the wire height, the distance between the poles, and the wire type Type and operating voltage and current; measure the number of the tower at both ends of the span, line direction, number of lines on the same pole, line arrangement, etc.; measurement in the converter station, the specific location of the measuring point, the operation mode, operating power, DC voltage, etc. of the converter station should be recorded.

At the same time, meteorological conditions such as wind speed, wind direction, temperature, relative humidity, and atmospheric pressure during the measurement period should be recorded, as well as the opening of each measurement.

Start time and end time.

For DC transmission line measurement records, see Table A.1;

The measurement records of the converter station are shown in Table A.2.

Appendix A

(Informative appendix) Measurement record Transmission line measurement records are shown in Table A.1.

references

[1] DL/T 334-2010 Technical specifications for electromagnetic environment monitoring of power transmission and transformation projects [2] DL/T 1089-2008 Test method for combined field strength and ion current density of DC converter station and line