NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB/T 11024.2-2019

Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V -- Part 2: Ageing testing

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Foreword

GB/T 11024, Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V, is divided 4 parts.

-- Part 1: General;

-- Part 2: Ageing testing;

-- Part 3: Protection of shunt capacitors and shunt capacitor banks;

-- Part 4: Internal fuses.

This Part is the 2nd part of GB/T 11024.

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

This Part replaces GB/T 11024.2-2001, Shunt capacitors for a.c. power systems having a rated voltage above 1 kV. Part 2: Endurance testing; compared with GB/T 11024.2-2001, the major technical changes are as follow:

-- Change the name of this Part from "Endurance testing" to "Ageing testing";

-- Delete the "overvoltage cycle test" in the scope (see Chapter 1, Chapter 1 of version 2001);

-- Move terms and definitions to GB/T 11024.1;

-- Move the overvoltage cycle test and Appendix A "Overvoltage waveform" which have been rewritten and adjusted from this Part to GB/T 11024.1, as a type test project;

-- Modify the test requirements for initial capacitance and dielectric loss tangent measurements (see 4.3.1, 2.1.2.3 of version 2001);

-- Move Appendix B, "Definition of component and capacitor case dimensions" to GB/T 11024.1.

This Part uses the redrafting method to modify the use of IEC/TS 60871-2: 2014 "Shunt capacitors for a.c. power systems having a rated voltage above 1 000 V - Part 2: Endurance testing".

The technical differences between this Part and IEC/TS 60871-2:2014 and their reasons are as follows:

-- With regard to the normative references, this Part makes technical adjustments to adapt to the technical conditions of China. The

Shunt capacitors for a.c. power systems having a

rated voltage above 1 000 V - Part 2: Ageing testing

1 Scope

This Part of GB/T 11024 specifies the requirements for the ageing testing of shunt capacitors for a.c. power systems having a rated voltage above 1 000 V.

This Part applies to capacitors in accordance with GB/T 11024.1.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 11024.1-2019, Shunt capacitors for a.c. power systems having a rated voltage above 1000V. Part 1: General (IEC 60871-1:2014, MOD)

JB/T 8957-1999, Method for verifying accuracy of tau delta measurements applicable to capacitors (idtIEC60996:1989)

3 Terms and definitions

Terms and definitions determined by GB/T 11024.1-2019 are applicable to this document.

4.1 Test requirements and overall objectives

The ageing testing is a special test to verify that the ageing degree that is caused by increasing test voltage at the rising temperatures does not cause premature breakdown of the dielectric. It is a means to ensure that the base material is properly selected and that it does not undergo any rapid ageing. This test should not be considered as a tool to make any accurate assessment of the dielectric life characteristics. To this end, manufacturers shall pay attention to various types of research and development activities.

The ageing testing shall be performed as a special test by the manufacturer for a particular dielectric system, i.e. not for capacitors of each specific rated value.

f) the length of the component (effective aluminum foil width) is allowed to vary within 50% ~ 400%; the unfolded length of the component (effective aluminum foil length) is allowed to vary within 30% ~ 300%.

A.2 Test unit design

If the following requirements are met, the test unit is considered to be comparable to the production unit:

a) components that meet the requirements of A.1 shall be assembled in the same manner as the production unit; the insulation between the components shall be the same or thinner; the components shall be pressed in the same manner; the compression factor shall be within the manufacturing tolerance.

b) the number of connected test unit components shall be not less than 4, so that the capacity under rated voltage (50 Hz) is not less than 100 kvar. All connected components shall be placed next to each other.

Note 1: The connected components can be connected in series and in parallel in any way to suit the test equipment.

c) the connections outside the test components can be enlarged, so as to cope with the increase in current that is caused by the parallel connection

of some components.

d) the thickness of the insulation-to-case shall be the same or thicker.

Note 2: This requirement is to ensure that the drying and dipping conditions are the same as those of the production unit. The electrical resistance requirements of the insulation-to-case are tested in accordance with the tests in Chapters 10 and 15 of GB/T 11024.1-2019.

e) The height deviation of the casing shall be +/-20% compared to the production unit; the length and width deviation of the casing shall be +/-50%.

Note 3: In order to allow component size changes, the range of the above casing dimensions is necessary.

The outer casing materials shall be of the same type (metal, polymer, etc.), but the topcoat can be omitted or can be different.

To accommodate the test voltage and/or test current, the design of the bushing and the number of bushings can be adjusted.

f) The drying and dipping processes shall be the same as the normal production process.

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