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IEEE Recommended Practice for Voltage-Endurance Testing of Form- Wound Bars and Coils

Sponsor

**Voltage Endurance Committee
of the
Dielectrics and Electrical Insulation Society**

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Abstract: The voltage endurance testing of form-wound bars and coils for use in large rotating machines is covered.

Keywords: electrical insulation, form-wound bars, form-wound coils, voltage endurance testing

The Institute of Electrical and Electronics Engineers, Inc.
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Introduction

(This introduction is not part of IEEE Std 1043-1996, IEEE Recommended Practice for Voltage Endurance Testing of Form-Wound Bars and Coils.)

The voltage endurance test for full size stator bars and coils has been used by generator manufacturers and users for almost 40 years. The first version of the recommended practice was issued in 1985. Its use over the years showed that the recommended practice needed to be clarified, and ambiguities needed to be eliminated. The present version has attempted to do this. Compared to the first version, there are no major differences in the testing procedure.

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IEEE Recommended Practice for Voltage-Endurance Testing of Form-Wound Bars and Coils

1. Overview

1.1 Scope

This recommended practice covers the voltage endurance testing of form-wound bars and coils for use in large rotating machine stator windings. Such testing is defined for machines with a nominal voltage rating up to 30 000 V. These tests are to be applied at 50 Hz or 60 Hz and may be done at either room temperature or elevated temperature. (Testing at 50 Hz or 60 Hz may yield different times to failure for comparable samples.) The specimen to be tested should be representative of the bars or coils used in the machine, and should include the complete insulated bar and external grading construction that the machine winding would have. Special features different than those used in the machine should not be added to the test specimens.

1.2 Purpose

The purpose of this recommended practice is to define a voltage endurance test method for use on insulated, form-wound bars and coils for installation in large rotating machine stators. These voltage endurance tests may be applied to representative specimens of form-wound, insulated bars and coils for either new machines or machines to be rewound. The intent of this document is to define the specimen, the associated testing equipment, and the procedure for performing these voltage endurance tests. Specific numerical values for acceptable voltage endurance lifetimes are not recommended at this time. The voltage and temperature of the test, the minimum acceptable lifetime, and the number of specimens to be tested should be established prior to testing (see 7.5).