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Partial discharge measurements
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HIGH-VOLTAGE TEST TECHNIQUES –
PARTIAL DISCHARGE MEASUREMENTS

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.

2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.

3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.

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International Standard IEC 60270 has been prepared by IEC technical committee 42: High-voltage test techniques.

This third edition cancels and replaces the second edition published in 1981 of which it constitutes a technical revision.

The text of this standard is based on the following documents:

<table>
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<th>FDIS</th>
<th>Report on voting</th>
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<td>42/162/FDIS</td>
<td>42/165/RVD</td>
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Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

Annex A forms an integral part of this standard.

Annexes B, C, D, E, F and G are for information only.

Terms used throughout this standard which have been defined in clause 3: **bold roman type**.
The committee has decided that the contents of this publication will remain unchanged until 2008. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

The contents of the corrigendum of October 2001 have been included in this copy.
HIGH-VOLTAGE TEST TECHNIQUES –
PARTIAL DISCHARGE MEASUREMENTS

1 Scope

This International Standard is applicable to the measurement of partial discharges which occur in electrical apparatus, components or systems when tested with alternating voltages up to 400 Hz or with direct voltage.

This standard
– defines the terms used;
– defines the quantities to be measured;
– describes test and measuring circuits which may be used;
– defines analogue and digital measuring methods required for common applications;
– specifies methods for calibration and requirements of instruments used for calibration;
– gives guidance on test procedures;
– gives some assistance concerning the discrimination of partial discharges from external interference.

The provisions of this standard should be used in the drafting of specifications relating to partial discharge measurements for specific power apparatus. It deals with electrical measurements of impulsive (short-duration) partial discharges, but reference is also made to non-electrical methods primarily used for partial discharge location (see annex F).

Diagnosis of the behaviour of specific power apparatus can be aided by digital processing of partial discharge data (see annex E) and also by non-electrical methods that are primarily used for partial discharge location (see annex F).

This standard is primarily concerned with electrical measurements of partial discharges made during tests with alternating voltage, but specific problems which arise when tests are made with direct voltage are considered in clause 11.

The terminology, definitions, basic test circuits and procedures often also apply to tests with other frequencies, but special test procedures and measuring system characteristics, which are not considered in this standard, may be required.

Annex A provides normative requirements for performance tests on calibrators.
2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60060-1, High-voltage test techniques – Part 1: General definitions and test requirements.

IEC 60060-2, High-voltage test techniques – Part 2: Measuring systems