



SLOVENSKI STANDARD
SIST EN 61975:2010/A2:2023

01-februar-2023

Visokonapetostne enosmerne inštalacije (HVDC) - Sistemski preskusi - Dopnilo A2 (IEC 61975:2010/AMD2:2022)

High-voltage direct current (HVDC) installations - System tests (IEC 61975:2010/AMD2:2022)

Anlagen zur Hochspannungsgleichstromübertragung (HGÜ) - Systemprüfungen (IEC 61975:2010/AMD2:2022)

Installations en courant continu à haute tension (CCHT) - Essais systèmes (IEC 61975:2010/AMD2:2022)

Ta slovenski standard je istoveten z: EN 61975:2010/A2:2022

ICS:

29.130.10	Visokonapetostne stikalne in krmilne naprave	High voltage switchgear and controlgear
-----------	--	---

SIST EN 61975:2010/A2:2023

en,fr,de

EUROPEAN STANDARD

EN 61975:2010/A2

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2022

ICS 29.130.10; 31.080.01

English Version

**High-voltage direct current (HVDC) installations - System tests
(IEC 61975:2010/AMD2:2022)**

Installations en courant continu à haute tension (CCHT) -
Essais systèmes
(IEC 61975:2010/AMD2:2022)

Anlagen zur Hochspannungsgleichstromübertragung (HGÜ)
- Systemprüfungen
(IEC 61975:2010/AMD2:2022)

This amendment A2 modifies the European Standard EN 61975:2010; it was approved by CENELEC on 2022-11-28. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this amendment the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CENELEC member.

This amendment exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 61975:2010/A2:2022 (E)**European foreword**

The text of document 22F/670/CDV, future IEC 61975/AMD2, prepared by SC 22F "Power electronics for electrical transmission and distribution systems" of IEC/TC 22 "Power electronic systems and equipment" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61975:2010/A2:2022.

The following dates are fixed:

- latest date by which the document has to be implemented at national (dop) 2023-08-28 level by publication of an identical national standard or by endorsement
- latest date by which the national standards conflicting with the (dow) 2025-11-28 document have to be withdrawn

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

Endorsement notice
(standards.iteh.ai)

The text of the International Standard IEC 61975:2010/AMD2:2022 was approved by CENELEC as a European Standard without any modification.

<https://standards.iteh.ai/catalog/standards/sist/b201206d-f013-4de7-96e0-d639912ef26c/sist-en-61975-2010-a2-2023>

Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

The Annex ZA of EN 61975:2010 applies with the following changes:

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
<i>Replace the reference to IEC 60633 with the following new reference:</i>				
IEC 60633	2019	High-voltage direct current (HVDC) transmission - Vocabulary	EN IEC 60633	2019

(standards.iteh.ai)

[SIST EN 61975:2010/A2:2023](https://standards.iteh.ai/catalog/standards/sist/b201206d-f013-4de7-96e0-d639912ef26c/sist-en-61975-2010-a2-2023)

<https://standards.iteh.ai/catalog/standards/sist/b201206d-f013-4de7-96e0-d639912ef26c/sist-en-61975-2010-a2-2023>



IEC 61975

Edition 1.0 2022-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

AMENDMENT 2
AMENDEMENT 2

High-voltage direct current (HVDC) installations – System tests

Installations en courant continu à haute tension (CCHT) – Essais systèmes

[SIST EN 61975:2010/A2:2023](https://standards.iteh.ai/catalog/standards/sist/b201206d-f013-4de7-96e0-d639912ef26c/sist-en-61975-2010-a2-2023)

<https://standards.iteh.ai/catalog/standards/sist/b201206d-f013-4de7-96e0-d639912ef26c/sist-en-61975-2010-a2-2023>

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 29.130.10; 31.080.01

ISBN 978-2-8322-5839-2

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HIGH-VOLTAGE DIRECT CURRENT (HVDC)
INSTALLATIONS – SYSTEM TESTS****AMENDMENT 2****FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. 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 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 IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

Amendment 2 to IEC 61975:2010 has been prepared by subcommittee 22F: Power electronics for electrical transmission and distribution systems, of IEC technical committee 22: Power electronic systems and equipment.

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

Draft	Report on voting
22F/670/CDV	22F/691/RVC

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Amendment is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications/.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

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

2 Normative references

Replace the existing reference to IEC 60633 with the following new reference:

IEC 60633:2019, *High-voltage direct current (HVDC) transmission – Vocabulary*

4.6.1 Factory system test

Add, in the first sentence of the existing last paragraph, the words "and protection" after "control".

4.6.2 Additional simulation test

Replace, in the existing first paragraph, modified by IEC 61975:2010/AMD1:2016, the words "the additional simulation test shall be conducted, if specified by the user" with "any additional simulation tests shall be conducted, if agreed upon between supplier and user".

Add, in item c) of the existing last paragraph, the words "and protection" after "control".

Figure 4 – Structure of system test

Delete, in the second bulleted list item of number 8) in the existing "Power transmission test" section, the word "end".

Replace the existing third bulleted list item of number 8) in the existing Power transmission test section, with the following new items:

- Overload conditions
- Rated load temperature rise

5.2.3.1 Low voltage energization

Replace, in the existing list, item b) with the following new item:

- b) The test may be performed by applying 0,5 kV to 10 kV.

Replace, in the existing note, the words "An alternative approach" with "The preferred approach".

5.2.3.2 High voltage energization

Replace, in the existing list, item c) with the following new item:

- c) Keep the transformer energized for a minimum number of hours as specified by the manufacturer and the local utilities.

5.5.3.2 Test procedure by emitting source

Replace, in the existing list, item b), modified by IEC 61975:2010/AMD1:2016, with the following new item:

- b) Verify that the doors of the control and protection cubicles are closed.

5.5.4 Test acceptance criteria

Add, in the existing text, the words "and protection" after "control".

5.6.1 General

Add, in the existing text, modified by IEC 61975:2010/AMD1:2016, the word "converter" before "transformers".

5.7.3.1 Open line test of the DC switchyard

Delete, in the existing list, items a), f), modified by IEC 61975:2010/AMD1:2016, and g).

6.1.1.2 General precondition

Replace, in item i) of the existing list, modified by IEC 61975:2010/AMD1:2016, the words "All control protection" with "All the control and protection system".

6.1.2.4 Test procedure

Add, in the last sentence of item b) of the existing list, modified by IEC 61975:2010/AMD1:2016, the abbreviated term "AC" before "voltage".

Replace, in the existing list, item h), modified by IEC 61975:2010/AMD1:2016, with the following new item:

- h) Remain at minimum power for as long as needed to complete necessary verification of measurements.

6.1.5.4 Test procedure

Add, at the end of the introduction sentence to the existing list, the words "at both rectifier and inverter side".

Replace the existing list, modified by IEC 61975:2010/AMD1:2016, with the following new list:

- a) Set tap changer control in manual control mode and raise two steps in rectifier side.
- b) Verify that the firing angle increases and the transmitted current is maintained.
- c) Set the tap changer control back to auto control mode.
- d) Verify that the tap changer automatically decreases, firing angle is back within control limits and the transmitted DC current is maintained.
- e) Set tap changer control in manual control mode and decrease two steps in inverter side.
- f) Verify that the tap changer automatically decreases, DC voltage or extinction angle changes based on the inverter control logic.
- g) Set the tap changer control back to auto control mode.