



SLOVENSKI STANDARD
SIST EN 62927:2018/oprA1:2022

01-december-2022

Elektronke za napetostno napajane pretvornike za statični sinhroni kompenzator (STATCOM) - Električno preskušanje - Dopolnilo A1

Amendment 1 - Voltage sourced converter (VSC) valves for static synchronous compensator (STATCOM) - Electrical testing

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Valves de convertisseur source de tension (VSC) pour compensateur synchrone statique (STATCOM) - Essais électriques

<https://standards.iteh.ai/catalog/standards/sist/640338e8-5925-4645-9f8e-629272018oprA1>

Ta slovenski standard je istoveten z: EN 62927:2017/prA1:2022

ICS:

19.080	Električno in elektronsko preskušanje	Electrical and electronic testing
29.200	Usmerniki. Pretvorniki. Stabilizirano električno napajanje	Rectifiers. Convertors. Stabilized power supply

SIST EN 62927:2018/oprA1:2022

en,fr,de



22F/699/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: IEC 62927/AMD1 ED1	
DATE OF CIRCULATION: 2022-10-21	CLOSING DATE FOR VOTING: 2023-01-13
SUPERSEDES DOCUMENTS: 22F/685/CD, 22F/698/CC	

IEC SC 22F : POWER ELECTRONICS FOR ELECTRICAL TRANSMISSION AND DISTRIBUTION SYSTEMS	
SECRETARIAT: IEC Secretariat	SECRETARY: Ms Suzanne Yap
OF INTEREST TO THE FOLLOWING COMMITTEES: TC 115	PROPOSED HORIZONTAL STANDARD: <input type="checkbox"/> Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: <input type="checkbox"/> EMC <input type="checkbox"/> ENVIRONMENT <input type="checkbox"/> QUALITY ASSURANCE <input type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	<input type="checkbox"/> NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

TITLE:

Amendment 1 – Voltage sourced converter (VSC) valves for static synchronous compensator (STATCOM) – Electrical testing

PROPOSED STABILITY DATE: 2027

NOTE FROM TC/SC OFFICERS:

Copyright © 2022 International Electrotechnical Commission, IEC. All rights reserved. It is permitted to download this electronic file, to make a copy and to print out the content for the sole purpose of preparing National Committee positions. You may not copy or "mirror" the file or printed version of the document, or any part of it, for any other purpose without permission in writing from IEC.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**VOLTAGE SOURCED CONVERTER (VSC) VALVES
FOR STATIC SYNCHRONOUS COMPENSATOR (STATCOM) –
ELECTRICAL TESTING**

AMENDMENT 1

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 1 to IEC 62927:2017 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
XX/XX/XXXX	XX/XX/XXX

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/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.

1

2 **Contents**3 *Delete the text “(optional)” from the title of Clause 12*4 **2 Normative references**5 *Replace the existing reference IEC 60071-1:2006, with the following new reference:*6 IEC 60071-1:2019, *Insulation co-ordination – Part 1: Definitions, principles and rules*7 **4.1.5 Evidence in lieu**8 *Add, the text “or individual parts of it” in the second sentence after the text “type test”*9 **4.1.6 Test object**10 *Delete, the first sentence of the first paragraph.*11 *Replace, the header of the first column of Table 1, with:*

12 “Number of valve levels, including redundant levels”

13 *Add, in the third row second column of Table 1, the text “valve” between “10” and “levels”.*14 *Delete, in c), the text “with the agreement of the purchaser and supplier,”.*15 *Replace, in d), the text “should” with “shall”.*16 *Add, after d), a new paragraph with the following text:*17 “This subclause does not apply to tests on the valve supporting structure and multiple valve
18 unit. The test object for those tests is defined in 7.2 and 8.3.”19 **4.1.10 Conditions to be considered in determination of type test parameters**

20 *Replace the text “should” with “shall”.*

21 **4.4 Permissible component failures during type testing**

22 *Add, at the end of the third paragraph, the following text:*

23 “Malfunction of valve level and component degrading detected in the routine test after type test
24 are deemed as faults shown by the rightmost column of Table 2.”

25 **5 List of tests**

26 *Delete, in Table 3 seventh row first column, the text “(optional)”.*

27 **6.3 Test circuit**

28 *Add, after the second paragraph, the following new paragraph:*

29 “In order to reproduce correct heating effects, the operational test should be performed at the
30 service frequency. When the service frequency is different from the test frequency, then the
31 test conditions shall be adjusted so as to approximately compensate the difference in frequency
32 dependent losses, as necessary to demonstrate the proper stressing of the equipment.”.

33 **6.4 Maximum continuous operating duty test**

34 *Add, at the start of the third bullet, the text “where snubbers are used,”.*

35 *Add, at the start of the sixth bullet, the text “where snubbers are used,”.*

36 *Add, at the start of the seventh paragraph, the text “In principle,” and replace the text
37 immediately after “The” with the text “the”.*

38 *Add, before the last paragraph, the following note:*

39 “NOTE Test voltage for MMC valves can be defined by the operating voltage of the submodule capacitor. A test
40 safety factor of 1,05 is applied to the test voltage for MMC valves.”

41 **6.5 Maximum temporary overload operating duty test**

42 *Add, after the first paragraph, the following new paragraph:*

43 “The test current shall be the specified overload current without a test safety factor.”

44 *Add, in the second sentence of the third paragraph, between “temporary” and “operating”, the
45 word “overload”.*

46 *Add, at the end of the third paragraph, the text “as a test safety factor”.*

47 *Add, at the end of the last paragraph, the text “as in 6.4”.*

48 **7.2 Test object**

49 *Replace, the last sentence of the first paragraph, with the following new sentence:*

50 “The coolant shall be in a condition representative of the most onerous service conditions
51 except for flow rate which can be reduced.”

52 7.3.3 Valve support lightning impulse test

53 *Replace, the third paragraph, with the following new paragraph:*

54 “The peak test voltage shall be selected in accordance with the insulation co-ordination of the
55 STATCOM valve substation or selected from the standard lightning impulse withstand voltage
56 according to IEC 60071-1:2019, Table 2 or 3. When the latter is used the transformer secondary
57 side (converter side) highest phase-to-phase voltage, instead of the STATCOM valve highest
58 voltage, shall be used as the highest equipment voltage to select the corresponding lightning
59 impulse peak.”

60 8.3 Test object

61 *Replace, the last sentence, with the following new sentence:*

62 “The coolant shall be in a condition representative of the most onerous service conditions
63 except for flow rate which can be reduced.”

64 8.4.3 MVU lightning impulse test

65 *Replace, the third paragraph, with the following new paragraph:*

66 “The peak test voltage shall be selected in accordance with the insulation co-ordination of the
67 STATCOM valve substation or selected from the standard lightning impulse withstand voltage
68 according to IEC 60071-1:2019, Table 2 or 3. When the latter is used the transformer secondary
69 side (converter side) highest phase-to-phase voltage, instead of the STATCOM valve highest
70 voltage, shall be used as the highest equipment voltage to select the corresponding lightning
71 impulse peak.”

72 9.1 Purpose of the test

73 *Delete, in c), the text “and” and replace the comma with period.*

74 *Delete, d).*

75 *Delete, at the start of the second paragraph, the text “It should be noted that” and replace the
76 text immediately after “The” with the text “the”.*

77 9.2 Test object

78 *Replace, in the second paragraph, the text “should” with “shall”.*

79 9.3.3 Method 2

80 *Add, after the second sentence of the second paragraph, the following new sentence:*

81 “Insulation and partial discharge tests with AC, DC. and/or combined AC-DC voltage shall be
82 performed on sub-component level (e.g., without power module electronics activated and
83 without capacitor) or on full submodule level. The aim is to test both, insulation withstand
84 capability for every single sub-component and proofness of partial discharge for every sensitive
85 point within the valve level.”

86 9.4.1.1 General

87 *Add, after the first paragraph, the following new note:*