



**SLOVENSKI STANDARD**  
**oSIST prEN IEC 61897:2019**  
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**Nadzemni vodi - Zahteve in preskusi za dušilnike vetrnih vibracij**

Overhead lines - Requirements and tests for Aeolian vibration dampers

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**Ta slovenski standard je istoveten z: prEN IEC 61897:2019**

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OF INTEREST TO THE FOLLOWING COMMITTEES: TC 7, TC 122	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 checked="" type="checkbox"/> SAFETY	
<input checked="" type="checkbox"/> SUBMITTED FOR CENELEC PARALLEL VOTING  <b>Attention IEC-CENELEC parallel voting</b> 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

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TITLE:

**Overhead lines - Requirements and tests for Aeolian vibration dampers**

PROPOSED STABILITY DATE: 2025

NOTE FROM TC/SC OFFICERS:

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

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**OVERHEAD LINES –****Requirements and tests for aeolian vibration dampers****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.
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International Standard IEC 61897 has been prepared by Maintenance Team MT1: Maintenance of TC 11 documents, of IEC Technical Committee 11: Overhead lines.

This second edition cancels and replaces the first edition published in 1998. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Consider, in addition to Stockbridge type aeolian vibration dampers, also Spiral aeolian vibration dampers and Elastomeric aeolian vibration dampers
- b) Consider the application of dampers on high temperature conductors, specifying additional high temperature tests in clamp slip tests
- c) Simplify the procedure of the damper effectiveness evaluation
- d) Introduce test at low temperature on fastener components such as break away bolts and conical spring washers
- e) Update the normative references
- f) Include figures showing the test arrangements for the main mechanical tests

Annexes A and C form an integral part of this standard.

Annex B and D are for information only.

55

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

FDIS	Report on voting
11/140/FDIS	11/142/RVD

57

58 Full information on the voting for the approval of this standard can be found in the report on  
59 voting indicated in the above table.

60 This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

61

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

65

66 reconfirmed,

67 withdrawn,

68 replaced by a revised edition, or

69 amended

70

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## OVERHEAD LINES – REQUIREMENTS AND TESTS FOR AEOLIAN VIBRATION DAMPERS

### 1 Scope

This International Standard applies to aeolian vibration dampers intended for single conductors or earth wires or conductor bundles where dampers are directly attached to each subconductor.

The purchaser may adopt part(s) of this standard when specifying requirements for cables different from those mentioned above (e.g. optical ground wires (OPGW), all dielectric self-supporting optical cables (ADSS)).

In some cases, test procedures and test values are left to agreement between the purchaser and the supplier and are stated in the procurement contract.

Annex A lists the minimum technical details to be agreed between purchaser and supplier.

Throughout this standard, the word “conductor” is used when the test applies to dampers for conductors or earth wires.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60050(466):1990, *International Electrotechnical Vocabulary (IEV) – Chapter 466: Overhead lines*

IEC 61284:1997, *Overhead lines – Requirements and tests for fittings*

IEC 60888:1987, *Zinc-coated steel wires for stranded conductors*

IEC 62567: 2013, *Methods for testing self-damping characteristics of stranded conductors for overhead lines*

ISO 1461: 2009, — *Hot dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods*

ISO 2859-1:1999, *Sampling procedures for inspection by attributes – Part 1: Sampling schemes indexed by acceptable quality limit (AQL) for lot-by-lot inspection + Amendment 1 (2011)*



ISO 2859-2:1985, *Sampling procedures for inspection by attributes – Part 2: Sampling plans indexed by limiting quality level (LQ) for isolated lot inspection*

ISO 3951-1:2013, *Sampling procedures for inspection by variables -- Part 1: Specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection for a single quality characteristic and a single AQL*

ISO 3951-2:2013, *Sampling procedures for inspection by variables -- Part 2: General specification for single sampling plans indexed by acceptance quality limit (AQL) for lot-by-lot inspection of independent quality characteristics*

ISO 9000:2015, *Quality management systems – Fundamentals and vocabularies*

ISO 9001:2015, *Quality management systems – Requirements*

ISO 9004:2018, *Managing for the sustained success of an organization – A quality management approach*

ISO 10684:2008, *Fasteners – Hot dip galvanized coatings*

### 3 Definitions

For the purpose of this International Standard, the definitions of the International Electrotechnical Vocabulary (IEV) apply, in particular IEC 60050(466). Those which differ or do not appear in the IEV are given below.

#### 3.1 stockbridge-type aeolian vibration damper

Device comprising a steel cable with a weight at each end and one bolted clamp or a helical rod attachment, attachable to a conductor, for the purpose of damping aeolian vibration

#### 3.2 spiral aeolian vibration damper (SVD)

Device made of helical plastic which wraps around the conductor for purposes of damping aeolian vibration (these are commonly used on earth wires, OPGW and ADSS cables).

#### 3.3 elastomeric aeolian vibration damper

Device comprising suspended weights connected to elastomeric articulations and one bolted clamp or a helical rod attachment, attachable to a conductor for the purpose of damping aeolian vibration.

#### 1.1 3.4 high temperature conductors (HTC)

1.2 conductors which are designed to have a maximum continuous operating temperature over 95°C.

#### 3.5 maximum continuous operating temperature

conductor temperature specified by the manufacturer and measured at the outer wire layers

### 4 General requirements

#### 4.1 Design

The damper shall be designed so as to

- damp aeolian vibration;
- withstand mechanical loads imposed during installation, maintenance and specified service conditions;
- avoid damage to the conductor under specified service conditions;
- be capable of being removed and re-installed without damage to the conductor;
- be free from unacceptable levels of corona and radio interference under all service conditions, when installed on phase conductors;
- be suitable for safe and easy installation. The clamp design shall retain all parts when opened for attachment to conductor. Furthermore, the clamp design shall be such that the

damper, during installation, can be suspended on the conductor before tightening the clamp;

- ensure that individual components will not become loose in service;
- maintain its function over the entire service temperature range;
- avoid audible noise;
- prevent water collection.

NOTE – Other desirable characteristics which are not essential to the basic functions of the damper but which may be advantageous include:

- verification of proper installation from the ground;
- easy installation and removal from energized lines.

In the case of vibration dampers for conductors or earth wires containing integral fibre optic elements (or an externally applied optical cable wrapped around the earth wire) the possible effects of the damper on these fibre optic elements should be accounted for.

## 4.2 Materials

The materials shall conform to the requirements of IEC 61284.

## 4.3 Mass, dimensions and tolerances

Damper mass and significant dimensions, including appropriate tolerances, shall be shown on contract drawings.

## 4.4 Protection against corrosion

In addition to the applicable requirements of IEC 61284, the messenger cable (including cut ends when exposed) shall be protected against corrosion, e.g. in accordance with IEC 60888 for hot dip galvanized steel wire.

## 4.5 Manufacturing appearance and finish

The dampers shall be free of defects and irregularities; they shall have all outside surfaces smooth and all edges and corners well-rounded.

## 4.6 Marking

The fitting marking requirements of IEC 61284 shall be applied to all clamp assemblies including those using breakaway bolts. On spiral dampers, the markings should be on the plastic rod.

## 4.7 Installation instructions

The supplier shall provide a clear and complete description of the recommended installation procedure including in-span positions.

## 5 Quality assurance

A quality assurance programme taking into account the requirements of this standard can be used by agreement between the purchaser and the supplier to verify the quality of the vibration dampers during the manufacturing process.

Detailed information on the use of quality assurance is given in a system as per ISO 9001 or similar.

It is recommended that test equipment used to verify compliance to this standard is routinely maintained and calibrated in accordance with a relevant quality standard.

## 6 Classification of tests

### 6.1 Type tests

#### 6.1.1 General

Type tests are intended to establish design characteristics. They are normally made once and repeated only when the design or the material of the damper components is changed. The results of type tests are recorded as evidence of compliance with design requirements.

#### 6.1.2 Application

Dampers shall be subjected to type tests as per Table 1.

Unless otherwise specified, each type test shall be performed on three test samples which are identical in all essential respects with dampers to be supplied under contract to the purchaser.

All units shall pass the tests.

The dampers used for tests during which no damage occurs to the units or their components may be used in subsequent tests.

### 6.2 Sample tests

#### 6.2.1 General

Sample tests are required to verify that the dampers meet the performance specifications of the type test samples. In addition, they are intended to verify the quality of material and workmanship.

#### 6.2.2 Application

Dampers shall be subjected to sample tests as per Table 1.

The samples to be tested shall be selected at random from the lot offered for acceptance. The purchaser has the right to make the selection.

The dampers used for tests during which no damage occurs to the units or their components may be used in subsequent tests.

#### 6.2.3 Sampling, acceptance criteria

The sampling plan procedures according to ISO 2859-1 and ISO 2859-2 (inspection by attributes) and ISO 3951 (inspection by variables) and the detailed procedures (inspection level, AQL, single, double or multiple sampling, etc.) shall be agreed between the purchaser and the supplier for each different attribute or variable.

NOTE – Sampling inspection by variables is an acceptance sampling procedure to be used in place of inspection by attributes when it is appropriate to measure on some continuous scale the characteristic(s) under consideration. In the case of failure load tests and similar expensive tests, better distinction between acceptable quality and objective quality is available with acceptance sampling by variables than by attributes for the same sample size.

The purpose of the sampling process may also be important in the choice between a variables or attributes plan. For example, a purchaser may choose to use an attributes acceptance sampling plan to assure that parts in a shipment lot are within a required dimensional tolerance; the manufacturer may make measurements under a variables sampling plan of the same dimensions because he is concerned with gradual trends or changes which may affect his ability to provide shipment lots which meet the AQL.

### 6.3 Routine tests

#### 6.3.1 General

Routine tests are intended to prove conformance of vibration dampers to specific requirements and are made on every damper. The tests shall not damage the dampers.

#### 6.3.2 Application and acceptance criteria

Whole lots of dampers may be subjected to routine tests. Any damper which does not conform to the requirements shall be discarded.

## 6.4 Table of tests to be applied

The following Table 1 indicates the tests which shall be performed. These are marked with an "X" in the table.

However, the purchaser may specify additional tests which are included in the table and marked with an "O".

Units or components damaged during the test shall be excluded from the delivery to the customer.

**Table 1 – Tests on dampers**

Subclause	Test	Type test	Sample test	Routine test
7.1	Visual examination	X	X	O
7.2	Verification of dimensions, materials and mass	X	X	
7.3	Corrosion protection tests	X	X	
7.4	Non-destructive tests	O	O	O
7.5	Clamp slip test	X	O	
7.6	Breakaway bolt test	X	X	
7.7	Clamp bolt tightening test	X	X	
7.8	Attachment of weights to messenger cable	X	X	
7.9	Attachment of clamp to messenger cable test	X	X	
7.10	Corona and radio interference voltage (RIV) tests <sup>1)</sup>	X		
7.11	Damper performance tests		O	
7.11.2	– Damper characteristic test	X		
7.11.3	– Damper effectiveness evaluation	X		
7.12	Damper fatigue test	X		
<sup>1)</sup> Not applicable for earth wire dampers.				
NOTES: <ul style="list-style-type: none"> <li>The supplier should state in the tender quality plan, or other tender documentation, which testing is already complete (i.e. which type tests) and which tests (sample or routine) are included in the tender, subject to the approval or change required by the purchaser.</li> <li>If conical washers are used on bolted clamps, embrittlement tests shall be performed in accordance with clause 7.5.2.2 of IEC 61854, Second edition.</li> </ul>				

## 7 Test methods

### 7.1 Visual examination

Type tests shall include visual examination to ascertain conformity of the dampers in all essential respects, with the manufacturing or contract drawings. Deviations from the drawings shall be subject to the approval of the purchaser and shall be appropriately documented as an agreed concession.

Sample tests and, if required, routine tests shall include visual examination to ensure conformity of manufacturing process, shape, coating and surface finish of the damper with the contract drawings. Particular attention shall be given to markings required and to the finish of surfaces which come into contact with the conductor. The sample test procedure and acceptance criteria shall be agreed between the purchaser and the supplier.

For dampers subjected to corona type test, the sample test shall include a comparison of shape and surface finish with one of the corona type test samples when specified by the purchaser.