



**SLOVENSKI STANDARD**  
**SIST EN 61400-2:1999**

**01-april-1999**

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**Sistemi generatorjev vetrne turbine – 2. del: Varnost malih vetrnih turbin (IEC 61400-2:1996)**

Wind turbine generator systems -- Part 2: Safety of small wind turbines

Windenergieanlagen -- Teil 2: Sicherheit kleiner Windenergieanlagen

Aérogénérateurs -- Partie 2: Sécurité des petits aérogénérateurs

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**Ta slovenski standard je istoveten z: EN 61400-2:1996**

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**ICS:**

27.180	Sistemi turbin na veter in drugi alternativni viri energije	Wind turbine systems and other alternative sources of energy
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**SIST EN 61400-2:1999**

**en**

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EUROPEAN STANDARD

**EN 61400-2**

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 1996

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ICS 27.180

Descriptors: Wind generators, safety, design, computation, stresses, loads, forces, protection, protection against live parts, installation, maintenance, tests

English version

**Wind turbine generator systems**  
**Part 2: Safety of small wind turbines**  
(IEC 1400-2:1996)

Aérogénérateurs  
Partie 2: Sécurité des petits  
aérogénérateurs  
(CEI 1400-2:1996)

Windenergieanlagen  
Teil 2: Sicherheit kleiner  
Windenergieanlagen  
(IEC 1400-2:1996)

This European Standard was approved by CENELEC on 1996-03-05. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard 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 Central Secretariat or to any CENELEC member.

This European Standard 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

### Foreword

The text of document 85/53/FDIS, future edition 1 of IEC 1400-2, prepared by IEC TC 88, Wind turbine generator systems, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61400-2 on 1996-03-05.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-01-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-01-01

For products which have complied with the relevant national standard before 1997-01-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2002-01-01.

Annexes designated "normative" are part of the body of the standard.  
Annexes designated "informative" are given for information only.  
In this standard, annex ZA is normative and annex A is informative.  
Annex ZA has been added by CENELEC.

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### Endorsement notice

The text of the International Standard IEC 1400-2:1996 was approved by CENELEC as a European Standard without any modification.

In the official version, for annex A, Bibliography, the following notes have to be added for the standards indicated:

- |             |  |
|-------------|--|
| IEC 34      | NOTE: Harmonized as HD 53 and EN 60034 series.   |
| IEC 269-2   | NOTE: Harmonized as EN 60269-2:1995.   |
| IEC 439     | NOTE: Harmonized as EN 60439 series.   |
| IEC 617     | NOTE: Harmonized as EN 60617 series.   |
| IEC 721-2-1 | NOTE: Harmonized, together with its amendment 1:1987, as HD 478.2.1 S1:1989.                                   |
| IEC 896     | NOTE: Harmonized as EN 60896 series.   |
| IEC 898     | NOTE: Harmonized as EN 60898:1991 + A1:1991 + A11:1994 + A12:1995 + A13:1995 + A14:1995 + A15:1995 + A16:1996. |
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**Annex ZA (normative)**

**Normative references to international publications  
with their corresponding European publications**

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE: When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 364	series	Electrical installations of buildings	HD 384	series
IEC 529	1989	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May	1991 1993
IEC 1000	series	Electromagnetic compatibility (EMC)	-	-
IEC 1400-1	1994	Wind turbine generator systems Part 1: Safety requirements	ENV 61400-1	1995
CISPR 11 (mod)	1990	Limits and methods of measurement of radio disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment	EN 55011	1991
ISO 2394	1986	General principles on reliability for structures	-	-
A1	1988		-	-
ISO 9001	1994	Quality systems - Model for quality assurance in design development, production, installation and servicing	EN ISO 9001	1994
ISO 9002	1994	Quality systems - Model for quality assurance in production, installation and servicing	EN ISO 9002	1994
ISO 9003	1994	Quality systems - Model for quality assurance in final inspection and test	EN ISO 9003	1994

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**NORME  
INTERNATIONALE  
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**1400-2**

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**Aérogénérateurs –**

**Partie 2:  
Sécurité des petits aérogénérateurs**

**iTeh STANDARD PREVIEW**  
**Wind turbine generator systems –**  
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**Part 2:  
Safety of small wind turbines**

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International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
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For price, see current catalogue*

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## WIND TURBINE GENERATOR SYSTEMS –

## Part 2: Safety of small wind turbines

## 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 cooperation 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 reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
- 5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
- 6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 1400-2 has been prepared by IEC technical committee 88: Wind turbine generator systems.

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

FDIS	Report on voting
88/53/FDIS	88/65/RVD

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

Annex A is for information only.

## INTRODUCTION

This part of IEC 1400 outlines minimum safety requirements for small wind turbine generator systems, and is not intended for use as a complete design specification or instruction manual.

Compliance with this standard does not relieve any person, organization, or corporation from the responsibility of observing other applicable regulations.

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## WIND TURBINE GENERATOR SYSTEMS –

### Part 2: Safety of small wind turbines

#### 1 General

##### 1.1 Scope and object

This part of IEC 1400 deals with safety philosophy, quality assurance, engineering integrity and specifies requirements for the safety of small wind turbine generator systems (SWTGS), including design, installation, maintenance and operation under specified external conditions. Its purpose is to provide the appropriate level of protection against damage from hazards from these systems during their planned lifetime.

This standard is concerned with all subsystems of SWTGS such as protection mechanisms, internal electrical systems, mechanical systems, support structures, foundations and the electrical interconnection with the load.

This standard applies to SWTGS with swept area smaller than 40 m<sup>2</sup> and generating at a voltage below 1 000 V a.c. or 1 500 V d.c.

This standard should be used together with the appropriate IEC and ISO standards (see 1.2).

##### 1.2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 1400. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 1400 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 364: *Electrical installations of buildings*

IEC 529: 1989, *Degrees of protection provided by enclosures (IP Code)*

IEC 1000: *Electromagnetic compatibility (EMC)*

IEC 1400-1: 1994, *Wind turbine generator systems – Part 1: Safety requirements*

IEC CISPR 11: 1990, *Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment*

ISO 2394: 1986, *General principles on reliability for structures*  
Addendum 1 (1988)

ISO 9001: 1994, *Quality systems – Model for quality assurance in design, development, production, installation and servicing*

ISO 9002: 1994, *Quality systems – Model for quality assurance in production, installation and servicing*

ISO 9003: 1994, *Quality systems – Model for quality assurance in final inspection and test*