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Wind turbines - Part 13: Measurement of mechanical loads

Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/16

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**Wind turbines - Part 13: Measurement of mechanical loads  
(IEC 61400-13:2015)**Éoliennes - Partie 13: Mesurage des charges mécaniques  
(IEC 61400-13:2015)Windenergieanlagen - Teil 13: Messung von mechanischen  
Lasten  
(IEC 61400-13:2015)

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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

**EN 61400-13:2016****European foreword**

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- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-10-25
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IEC 61400-12-2	NOTE	Harmonized as EN 61400-12-2.
IEC 61400-22	NOTE	Harmonized as EN 61400-22.

## Annex ZA (normative)

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

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050	Series	International Electrotechnical Vocabulary	-	-
IEC 61400-1	2005	Wind turbines - Part 1: Design requirements	EN 61400-1	2005
IEC 61400-12-1	-	Wind turbines - Part 12-1: Power performance measurements of electricity producing wind turbines	EN 61400-12-1	-
ISO/IEC Guide 98-3 -		Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement	-	-



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Edition 1.0 2015-12

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**Wind turbines –  
Part 13: Measurement of mechanical loads**

**Éoliennes –  
Partie 13: Mesurage des charges mécaniques**





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# INTERNATIONAL STANDARD

# NORME INTERNATIONALE



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**Wind turbines –  
Part 13: Measurement of mechanical loads**

**Éoliennes –  
Partie 13: Mesurage des charges mécaniques**

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## WIND TURBINES –

### Part 13: Measurement of mechanical loads

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This International Standard IEC 61400-13 has been prepared by IEC technical committee 88: Wind turbines.

This standard replaces IEC TS 61400-13 published in 2001. This first edition constitutes a technical revision and transition from technical specification to International Standard.

This first edition includes the following changes with respect to the technical specification:

- a) scope of the document focused to load measurements for the purpose of model validation;
- b) number of measurement load cases to match the new scope reduced;
- c) capture matrix requirements to match the new scope reduced;
- d) requirements to address the state of the art technology updated.

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

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88/511/CDV	88/554/RVC

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 2.

A list of all parts in the IEC 61400 series, published under the general title *Wind turbines*, can be found on the IEC website.

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## INTRODUCTION

In the process of structural design of a wind turbine, thorough understanding about, and accurate quantification of, the loading is of utmost importance.

In the design stage, loads can be predicted with aeroelastic models and codes. However, such models have their shortcomings and uncertainties, and they always need to be validated by measurement.

Mechanical load measurements can be used both as the basis for design and as the basis for certification. Design aspects for wind turbines are covered by IEC 61400-1 whilst certification procedures are described in IEC 61400-22. This standard is aimed at the test institute, the turbine manufacturer and the certifying body and clearly defines the minimum requirements for a mechanical loads test resulting in consistent, high quality reproducible test results.



## WIND TURBINES –

### Part 13: Measurement of mechanical loads

#### 1 Scope

This part of the IEC 61400 describes the measurement of fundamental structural loads on wind turbines for the purpose of the load simulation model validation. The standard prescribes the requirements and recommendations for site selection, signal selection, data acquisition, calibration, data verification, measurement load cases, capture matrix, post-processing, uncertainty determination and reporting. Informative annexes are also provided to improve understanding of testing methods.

The methods described in this document can also be used for mechanical loads measurements for other purposes such as obtaining a measured statistical representation of loads, direct measurements of the design loads, safety and function testing, or measurement of component loads. If these methods are used for an alternative objective or used for an unconventional wind turbine design, the required signals, measurement load cases, capture matrix, and post processing methods should be evaluated and if needed adjusted to fit the objective.

These methods are intended for onshore electricity-generating, horizontal-axis wind turbines (HAWTs) with rotor swept areas of larger than 200 m<sup>2</sup>. However, the methods described may be applicable to other wind turbines (for example, small wind turbines, ducted wind turbines, vertical axis wind turbines).

#### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at <<http://www.electropedia.org/>>)

IEC 61400-1:2005, *Wind turbines – Part 1: Design requirements*

IEC 61400-12-1, *Wind turbines – Part 12-1: Power performance measurements of electricity producing wind turbines*

ISO/IEC Guide 98-3, *Uncertainty of measurement – Part 3: Guide to the expression of uncertainty in measurement*

**koniec náhľadu – text ďalej pokračuje v platenej verzii STN**