SLOVENSKI STANDARD
SIST-TS CLC/TS 61400-26-2:2017

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Vetrne turbine - 26-2. del: Razpoložljivost, ki temelji na proizvodnji vetrnih elektrarn (IEC/TS 61400-26-2:2014)

Wind turbines - Part 26-2: Production-based availability for wind turbines (IEC/TS 61400-26-2:2014)

Windenergieanlagen - Teil 26-2: Erzeugungsbasierte Verfügbarkeit von Windenergieanlagen (IEC/TS 61400-26-2:2014)

Éoliennes - Partie 26-2: Disponibilité fondée sur la production pour les éoliennes (IEC/TS 61400-26-2:2014)

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ICS:

27.180	Vetrne elektrarne	Wind turbine energy systems

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CLC/TS 61400-26-2

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English Version

Wind turbines - Part 26-2: Production-based availability for wind turbines (IEC/TS 61400-26-2:2014)

Éoliennes - Partie 26-2: Disponibilité fondée sur la production pour les éoliennes (IEC/TS 61400-26-2:2014)

Windenergieanlagen - Teil 26-2: Erzeugungsbasierte Verfügbarkeit von Windenergieanlagen (IEC/TS 61400-26-2:2014)

This Technical Specification was approved by CENELEC on 2017-07-17.

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

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European foreword

This document (CLC/TS 61400-26-2:2017) consists of the text of IEC/TS 61400-26-2:2014 prepared by IEC/TC 88 "Wind energy generation systems".

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.

Endorsement notice

The text of the International Standard IEC/TS 61400-26-2:2014 was approved by CENELEC as a Technical Specification without any modification.

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

IEC 61400-1:2005	NOTE	Harmonized as EN 61400-1:2005 (not modified).
IEC 61400-12-1:2005	NOTE	Harmonized as EN 61400-12-1:2006 (not modified).
IEC 61400-12-2:2013	NOTE	Harmonized as EN 61400-12-2:2013 (not modified).
IEC 61400-25-1:2006	NOTE	Harmonized as EN 61400-25-1:2007 (not modified).
IEC 61400-25-2:2006	NOTE	Harmonized as EN 61400-25-2:2007 (not modified).
IEC 61400-25-3:2006	NOTE	Harmonized as EN 61400-25-3:2007 (not modified).
IEC 61400-25-4:2008	NOTE	Harmonized as EN 61400-25-4:2008 (not modified).
IEC 61400-25-5:2006	NOTE	Harmonized as EN 61400-25-5:2007 (not modified).
IEC 61400-25-6:2010	NOTE	Harmonized as EN 61400-25-6:2011 (not modified).

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 When 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.

Publication	Year	Title	EN/HD	Year
IEC 60050	series	International Electrotechnical Vocabulary	-	-
IEC/TS 61400-26-1	2011	Wind turbines - Part 26-1: Time-based availability for wind turbine generating systems	CLC/TS 61400-26-1	2017

IEC TS 61400-26-2

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TECHNICAL SPECIFICATION

colour inside

Wind turbines –
Part 26-2: Production-based availability for wind turbines

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 61400-26-2, which is a technical specification, has been prepared by IEC technical committee 88: Wind turbines.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
88/455/DTS	88/483/RVC

Full information on the voting for the approval of this technical specification 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 of the IEC 61400 series, under the general title *Wind turbines,* can be found on the IEC website.

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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual edition of this document may be issued at a later date.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The intention of this technical specification is to define a common basis for exchange of information on performance indicators between owners, utilities, lenders, operators, manufacturers, consultants, regulatory bodies, certification bodies, insurance companies and other stakeholders in the wind power generation business. This is achieved by providing an information model specifying how time designations shall be split into information categories. The information model forms the basis for how to allocate time for reporting availability and reliability indicators.

The technical specification defines generic terms of wind turbine systems and environmental constraints in describing system and component availability, lifetime expectancy, repairs and criteria for determining overhaul intervals. The specification defines terminology and generic terms for reporting energy based generating unit availability measurement. A generating unit includes all equipment up to the point of electrical connection. Availability measurements are concerned with fractions of time and energy a unit is capable of providing during service, taking environmental aspects into account. Environmental aspects will be wind and other weather conditions, as well as grid and substation conditions. The specification furthermore defines terminology and terms for reporting performance indicators based on energy production. Mandatory information categories defined in the technical specification are written in capital letters; optional information categories defined in the technical specification are written in bold letters.

The project scope is accomplished by separating the technical specification into three parts:

- IEC TS 61400-26-1, which specifies terms for time-based availability of a wind turbine generating system;
- IEC TS 61400-26-2, which specifies terms for production-based availability of a wind turbine generating system;
- IEC/TS 61400-26-3, which specifies terms for time-based and production-based availability of a wind power station.

Part 2 is an extension of Part 1 that deals with the use of production elements based on the information model defined in Part 1. The structure and interrelations in the applied information model are defined in Part 1 and apply to the production based extensions made in Part 2.

The intention of Part 2 is to define a common basis for exchange of information on production-based availability. This is achieved by using the information model specifying how time and energy designations shall be split into information categories and assigned to production terms.

NOTE The point of electrical connection is defined individually from one project to the other, but is normally understood as the electrical low voltage or high voltage terminals of the wind turbine generating system connecting to the feeder cables.

WIND TURBINES –

Part 26-2: Production-based availability for wind turbines

1 Scope

This part of IEC 61400 provides a framework from which production-based performance indicators of a WTGS (wind turbine generator system) can be derived. It unambiguously describes how data is categorised and provides examples of how the data can be used to derive performance indicators.

The approach of this part of IEC 61400 is to expand the time allocation model, introduced in IEC TS 61400-26-1, with two additional layers for recording of the actual energy production and potential energy production associated with the concurrent time allocation.

It is not the intention of this Technical Specification to define how production-based availability shall be calculated. Nor is it the intention to form the basis for power curve performance measurements, which is the objective of IEC 61400-12.

This document also includes informative annexes with:

- examples of determination of lost production,
- examples of algorithms for production-based indicators,
- examples of other performance indicators,
- examples of application scenarios.

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 TS 61400-26-1:2011, *Wind turbines – Part 26-1: Time-based availability for wind turbine generating systems*

3 Terms, definitions and abbreviations

For the purposes of the present document, the following terms, definitions and abbreviations apply, as well as the relevant terms and definitions contained in IEC TS 61400-26-1 and IEC 60050-415.

3.1 Terms and definitions

3.1.1
site conditions
conditions affecting the energy production of the WTGS, e.g. topographic, climatic and meteorological conditions, sector management, electrical environment and contractual constraints

3.1.2
actual energy production
energy measured at the point of connection to the power collection system (according to IEV and IEC 60050-415)

Note 1 to entry: The connection point may be at low voltage level or at medium or high voltage level depending on the design of the WTGS.

3.1.3
potential energy production
calculated energy based on the WTGS design criteria and technical specifications and the site conditions

3.1.4
lost production
energy not supplied

Note 1 to entry: The lost production is the difference between potential energy production potential energy production and actual energy production.

3.2 Abbreviations

3.2.1 Information available

IA	Information available category
IAO	Information available operative category
IAOG	Information available operative generating category
IAOGFP	Information available operative generating with full performance category
IAOGPP	Information available operative generating with partial performance category
IAONG	Information available operative non generating category
IAONGTS	Information available operative non generating technical standby category
IAONGEN	Information available operative non generating out of environmental specification category
IAONGEL	Information available operative non generating out of electrical specification category
IAONGRS	Information available operative non generating requested shutdown category
IANO	Information available non operative category
IANOSM	Information available non operative scheduled maintenance category
IANOPCA	Information available non operative planned corrective action category
IANOFO	Information available non operative forced outage category
IANOS	Information available non operative suspended category
IAFM	Information available force majeure category
IAP_P	Information available category – potential energy production
IAP_A	Information available category – actual energy production
$IAOP_P$	Information available operative category – potential energy production
$IAOP_A$	Information available operative category – actual energy production
$IAOGP_P$	Information available operative generating category – potential energy production
$IAOGP_A$	Information available operative generating category – actual energy production
$IAOGFPP_P$	Information available operative generating with full performance category – potential energy production