SLOVENSKI STANDARD
SIST EN 61400-27-1:2015

01-december-2015

Vetrne turbine - 27-1. del: Električni simulacijski modeli - Vetrne turbine

Wind turbines - Part 27-1: Electrical simulation models - Wind turbines

Ta slovenski standard je istoveten z: **EN 61400-27-1:2015**

ICS:

27.180	Sistemi turbin na veter in drugi alternativni viri energije	Wind turbine systems and other alternative sources of energy

SIST EN 61400-27-1:2015 **en**

EUROPEAN STANDARD
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EUROPÄISCHE NORM

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English Version

Wind turbines - Part 27-1: Electrical simulation models - Wind turbines (IEC 61400-27-1:2015)

Eoliennes - Partie 27-1: Modèles de simulation électrique - Eoliennes (IEC 61400-27-1:2015)

Windenergieanlagen - Teil 27-1: Elektrische Simulationsmodelle - Windenergieanlagen (IEC 61400-27-1:2015)

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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

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European foreword

The text of document 88/510/FDIS, future edition 1 of IEC 61400-27-1, prepared by IEC TC 88 "Wind turbines" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61400-27-1:2015.

The following dates are fixed:

• latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2016-04-16
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2018-03-20

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The text of the International Standard IEC 61400-27-1:2015 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following note has to be added for the standard indicated:

IEC 61400-25 (Series)	NOTE	Harmonised as EN 61400-25 (Series).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

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	-	series
IEC 61400-21	-	Wind turbines -- Part 21: Measurement and assessment of power quality characteristics of grid connected wind turbines	EN 61400-21	-

IEC 61400-27-1

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Wind turbines –
Part 27-1: Electrical simulation models – Wind turbines

Eoliennes –
Partie 27-1: Modèles de simulation électrique – Eoliennes

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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WIND TURBINES –

Part 27-1: Electrical simulation models – Wind turbines

FOREWORD

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International Standard IEC 61400-27-1 has been prepared IEC Technical Committee 88: Wind turbines.

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

Enquiry draft	Report on voting
88/510/FDIS	88/529/RVD

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 in the IEC 61400 series, published 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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 IEC 61400-27 series specifies standard dynamic electrical simulation models for wind power generation. IEC 61400-27-1 specifies wind turbine models and model validation procedure. IEC 61400-27-2 will specify wind power plant models and model validation procedure.

The increasing penetration of wind energy in power systems implies that Transmission System Operators (TSOs) and Distribution System Operators (DSOs) need to use dynamic models of wind power generation for power system stability studies. The models developed by the wind turbine manufacturers reproduce the behaviour of their machines with a high level of detail. Such level of detail is not suitable for stability studies of large power systems with a huge number of wind power plants, firstly because the high level of detail increases the complexity and thus computer time dramatically, and secondly because the use of detailed manufacturer specific models requires a substantial amount of input data to represent the individual wind turbine types.

The purpose of this standard is to specify generic dynamic models, which can be applied in power system stability studies. The IEEE/CIGRE Joint Task Force on Stability Terms and Definitions has classified power system stability in categories according to Figure 1.

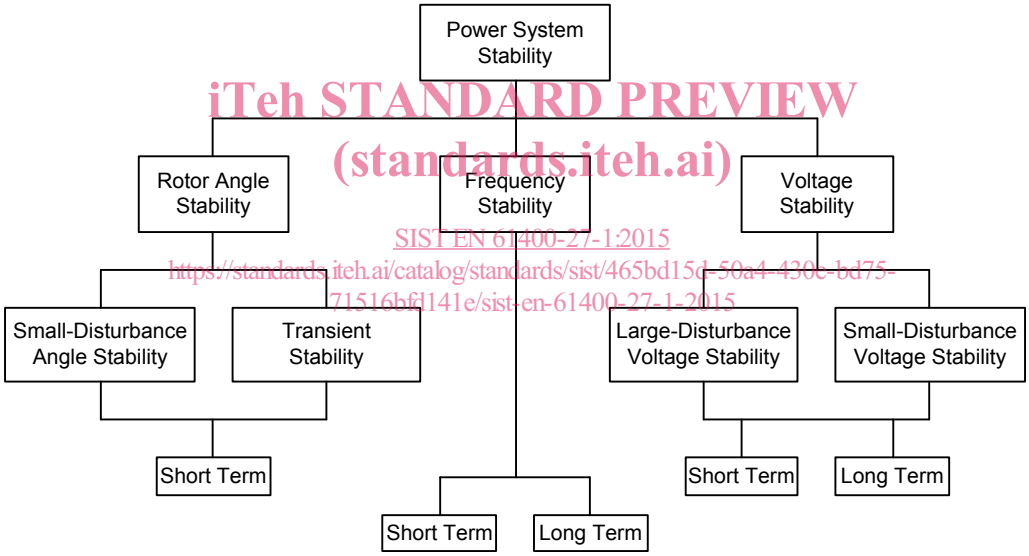

Figure 1 – Classification of power system stability according to IEEE/CIGRE Joint Task Force on Stability Terms and Definitions

Referring to these categories, the models are developed to represent wind power generation in studies of large-disturbance short term voltage stability phenomena, but they will also be applicable to study other dynamic short term phenomena such as rotor angle stability, frequency stability and small-disturbance voltage stability. Thus, the models are applicable for dynamic simulations of power system events such as short-circuits (low voltage ride through), loss of generation or loads, and system separation of one synchronous area into more synchronous areas as specified in the scope.

The models have to be complete enough to represent the dynamic behaviour at the wind turbine terminals, but must also be suitable for large-scale grid studies. Therefore simplified wind turbine models are specified to perform the typical response of known wind turbine technologies.