SVENSK STANDARD SS-EN 62253

Fastställd	Utgåva	Sida	Ansvarig kommitté
2012-02-15	1	1 (1+24)	SEK TK 82

Soldrivna pumpar – Konstruktionsgodkännande och bestämning av prestanda

Photovaltaic pumping systems –
Design qualification and performance measurements

Som svensk standard gäller europastandarden EN 62253:2011. Den svenska standarden innehåller den officiella engelska språkversionen av EN 62253:2011.

Nationellt förord

Europastandarden EN 62253:2011

består av:

– **europastandardens ikraftsättningsdokument,** utarbetat inom CENELEC
– **IEC 62253, First edition, 2011 - Photovaltaic pumping systems - Design qualification and performance measurements**

utarbetad inom International Electrotechnical Commission, IEC.

ICS 27.160

Denna standard är fastställd av SEK Svensk Elstandard,
som också kan lämna upplysningar om **sakinnehållet** i standarden.
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Det finns många fördelar med att ha gemensamma tekniska regler för bl a säkerhet, prestanda, dokumentation, utförande och skötsel av elprodukter, elanläggningar och metoder. Genom att utforma sådana standarder blir säkerhetskraven tydliga och utvecklingskostnaderna rimliga samtidigt som marknadens acceptans för produkten eller tjänsten ökar.

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Den som deltar i SEKs tekniska kommittéarbete har möjlighet att påverka framtida standarder och får tidig tillgång till information och dokumentation om utvecklingen inom sitt teknikområde. Arbetet och kontakterna med kollegor, kunder och konkurrenter kan gynnsamt påverka enskilda företags affärsutveckling och bidrar till deltagarnas egen kompetensutveckling.

Du som vill dra nytta av dessa möjligheter är välkommen att kontakta SEKs kansli för mer information.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62253

September 2011

ICS 27.160

English version

Photovoltaic pumping systems - Design qualification and performance measurements
(IEC 62253:2011)

Systèmes de pompage photovoltaïques - Qualification de la conception et mesures de performance
(CEI 62253:2011)

Photovoltaische Pumpensysteme - Bauarteignug und Prüfung des Leistungsverhaltens
(IEC 62253:2011)

CENELEC

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

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 62253:2011 E

SEK Svensk Elstandard

Foreword

The text of document 82/647/FDIS, future edition 1 of IEC 62253, prepared by IEC TC 82, "Solar photovoltaic energy systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62253:2011.

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)	2012-05-19
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2014-08-19

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Endorsement notice

The text of the International Standard IEC 62253:2011 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application 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 When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60068-2-6	-	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	-
IEC 60068-2-30	-	Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	-
IEC 60146	Series	Semiconductor converters - General requirements and line commutated converters	EN 60146	Series
IEC 60364-4-41	-	Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock	HD 60364-4-41	-
IEC 60364-7-712	-	Electrical installations of buildings - Part 7-712: Requirements for special installations or locations - Solar photovoltaic (PV) power supply systems	HD 60364-7-712	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	-	-
IEC 60947-1	-	Low-voltage switchgear and controlgear - Part 1: General rules	EN 60947-1	-
IEC 61000-6-2	-	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments	EN 61000-6-2	-
IEC 61000-6-3	-	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	EN 61000-6-3	-
IEC 61215	-	Crystalline silicon terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61215	-
IEC 61646	-	Thin-film terrestrial photovoltaic (PV) modules - Design qualification and type approval	EN 61646	-
IEC 61683	1999	Photovoltaic systems - Power conditioners - Procedure for measuring efficiency	EN 61683	2000
IEC 61725	-	Analytical expression for daily solar profiles	EN 61725	-
IEC 61730-1 (mod)	-	Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction	EN 61730-1	-
IEC 61730-2 (mod)	-	Photovoltaic (PV) module safety qualification - Part 2: Requirements for construction	EN 61730-2	-

Publication	Year	Title	EN/HD	Year
IEC 61800-3	-	Adjustable speed electrical power drive systems - Part 3: EMC requirements and specific test methods	EN 61800-3	-
IEC 62103	-	Electronic equipment for use in power installations	-	-
IEC 62109-1	-	Safety of power converters for use in photovoltaic power systems - Part 1: General requirements	EN 62109-1	-
IEC 62124	2004	Photovoltaic (PV) stand-alone systems - Design verification	EN 62124	2005
IEC 62305-3	-	Protection against lightning - Part 3: Physical damage to structures and life hazard	EN 62305-3	-
IEC 62458	-	Sound system equipment - Electroacoustic transducers - Measurement of large signal parameters	EN 62458	-
IEC 62548	201X[1)]	Design requirements for photovoltaic (PV) arrays	EN 62548	201X[1)]
ISO 9905	1994	Technical specifications for centrifugal pumps - Class I	EN ISO 9905	1997

[1)] To be published.

CONTENTS

PHOTOVOLTAIC PUMPING SYSTEMS – DESIGN QUALIFICATION AND PERFORMANCE MEASUREMENTS

1 Scope and object

This International Standard defines the requirements for design, qualification and performance measurements of photovoltaic pumping systems in stand-alone operation. The outlined measurements are applicable for either indoor tests with PV generator simulator or outdoor tests using a real PV generator. This standard applies to systems with motor pump sets connected to the PV generator directly or via a converter (DC to DC or DC to AC). It does not apply to systems with electrical storage unless this storage is only used for the pump start up (< 100 Wh).

The goal is to establish a PV pumping system design verification procedure according to the specific environmental conditions. This Standard addresses the following pumping system design features:

- Power vs. flow rate characteristics at constant pumping head
- Pumping head vs. flow rate characteristics at constant speed
- System design parameters and requirements
- System specification
- Documentation requirements
- System design verification procedure

The object of this standard is to establish requirements in order to be able to verify the system performance characteristics of the PV pumping system. For this purpose the test set-up is outlined, the measurements and deviations to be taken are defined and a checklist for the data mining is established.

2 Normative references

The following referenced documents are indispensable for the application 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.

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-30, *Environmental testing – Part 2:30: Tests – Test Db: Damp heat, cyclic (12 + 12 h cycle)*

IEC 60146 (all parts), *Semiconductor converters – General requirements and line commutated converters*

IEC 60364-4-41, *Low-voltage electrical installations – Part 4-41: Protection for safety – Protection against electric shock*

IEC 60364-7-712, *Electrical installations of buildings – Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems*

IEC 60529, *Degree of protection provided by enclosures (IP Code)*

IEC 60947-1, *Low voltage switchgear and controlgear – Part 1: General rules*

IEC 61000-6-2, *Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments*

IEC 61000-6-3, *Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standard for residential, commercial and light-industrial environments*

IEC 61215, *Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval*

IEC 61646, *Thin-film terrestrial photovoltaic (PV) modules – Design qualification and type approval*

IEC 61683:1999, *Photovoltaic systems – Power conditioners – Procedure for measuring efficiency*

IEC 61725, *Analytical expression for daily solar profiles*

IEC 61730-1, *Photovoltaic (PV) module safety qualification – Part 1: Requirements for construction*

IEC 61730-2, *Photovoltaic (PV) module safety qualification – Part 2: Requirements for testing*

IEC 61800-3, *Adjustable speed electrical power drive systems – Part 3: EMC requirements and specific test methods*

IEC 62103, *Electronic equipment for use in power installations*

IEC 62109-1, *Safety of power converters for use in photovoltaic power systems – Part 1: General requirements*

IEC 62124:2004, *Photovoltaic (PV) stand-alone systems design verification*

IEC 62305-3, *Protection against lightning – Part 3: Physical damage to structures and life hazard*

IEC 62458, *Sound system equipment – Electroacoustical transducers – Measurement of large signal parameters*

IEC 62548[1], *Design requirements for photovoltaic (PV) arrays*

ISO/DIS 9905, *Technical specifications for centrifugal pumps – Class I (ISO 9905:1994)*

[1] To be published.