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Concentrator photovoltaic (CPV) modules - Thermal cycling test to differentiate increased thermal fatigue durability

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 62925:2017 sisaldab Euroopa standardi EN 62925:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 62925:2017 consists of the English text of the European standard EN 62925:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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English Version

Concentrator photovoltaic (CPV) modules - Thermal cycling test to differentiate increased thermal fatigue durability (IEC 62925:2016)

Modules photovoltaïques à concentration (CPV) - Essai de cycles thermiques pour la détermination de la durabilité renforcée à la fatigue thermique
(IEC 62925:2016)

CPV-Module - Temperaturwechselprüfung für CPV-Module zur Bewertung erhöhter Temperaturwechselbeständigkeit
(IEC 62925:2016)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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European foreword

The text of document 82/1185/FDIS, future edition 1 of IEC 62925, prepared by IEC/TC 82 "Solar photovoltaic energy systems" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62925:2017.

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) 2017-11-05
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2020-05-05

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Endorsement notice

The text of the International Standard IEC 62925:2016 was approved by CENELEC as a European Standard without any modification.

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INTRODUCTION

IEC 62108 defines IEC requirements for the design qualification of concentrator modules for long-term operation in general open-air climates. This standard, IEC 62925, is not compulsory with but will supplement IEC 62108 by providing tests that differentiate thermal fatigue durability of concentrator modules for deployment in a larger range of applications and climates.

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CONCENTRATOR PHOTOVOLTAIC (CPV) MODULES – THERMAL CYCLING TEST TO DIFFERENTIATE INCREASED THERMAL FATIGUE DURABILITY

1 Scope

This document defines a test sequence that will quickly uncover CPV module failures that have been associated with field exposure to thermal cycling for many years. This document was specifically developed to relate to thermal fatigue failure of the HCPV die-attach, however, it also applies, to some extent, to all thermal fatigue related failure mechanisms for the assemblies submitted to test.

IEC 62108, the CPV module qualification test already includes an accelerated thermal cycle sequence in one leg of the testing, however, the parameters of that test only represent a qualification level of exposure. This test procedure applies more stress and will provide a route for comparative testing to differentiate CPV modules with improved durability to thermal cycling and the associated mechanical stresses.

2 Normative references

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.

IEC 62108:2016, *Concentrator photovoltaic (CPV) modules and assemblies – Design qualification and type approval*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

durability

system's capacity to resist degradation specific for a particular stress or set of stresses

Note 1 to entry: The durability with respect to all relevant stresses shall be assessed in order to gain information about the anticipated performance of the system.

3.2

reliability

probability for a system to perform and maintain its designed function in specific conditions for a specified period of time

Note 1 to entry: In this context the term reliability shall be accompanied by three numbers: a) a specified period of time, b) a criterion that quantifies its performance at that time and c) the probability that the criterion will be met.