SLOVENSKI STANDARD

SIST EN 61163-1:2008

01-februar-2008

Presejalno preskušanje glede zanesljivosti - 1. del: Popravljivi sestavi, izdelani v lotih (IEC 61163-1:2006)

Reliability stress screening - Part 1: Repairable assemblies manufactured in lots (IEC 61163-1:2006)

Zuverlässigkeitsvorbehandlung durch Beanspruchung - Teil 1: Instandsetzbare Baugruppen, losweise gefertigt (IEC 61163-1:2006)

Déverminage sous contraintes - Partie 1: Assemblages réparables fabriqués en lots (IEC 61163-1:2006)

Ta slovenski standard je istoveten z: **EN 61163-1:2006**

ICS:

03.120.01

21.020

SIST EN 61163-1:2008 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 61163-1

December 2006

ICS 03.120.01; 03.120.30; 21.020

English version

Reliability stress screening
Part 1: Repairable assemblies manufactured in lots
(IEC 61163-1:2006)

Déverminage sous contraintes
Partie 1: Assemblages réparables
fabriqués en lots
(CEI 61163-1:2006)

Zuverlässigkeitsvorbehandlung
durch Beanspruchung
Teil 1: Instandsetzbare Baugruppen,
losweise gefertigt
(IEC 61163-1:2006)

This European Standard was approved by CENELEC on 2006-11-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

Ref. No. EN 61163-1:2006 E

Foreword

The text of document 56/1102/FDIS, future edition 2 of IEC 61163-1, prepared by IEC TC 56, Dependability, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61163-1 on 2006-11-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2007-08-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2009-11-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 61163-1:2006 was approved by CENELEC as a European Standard without any modification.

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

IEC 60068 NOTE Harmonized as EN 60068 (series) (not modified).

IEC 61014 NOTE Harmonized as EN 61014:2003 (not modified).

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 60050-191	-[1)]	International Electrotechnical Vocabulary (IEV) Chapter 191: Dependability and quality of service	-	-
IEC 60068-2-2	-[1)]	Environmental testing Part 2: Tests - Tests B: Dry heat	EN 60068-2-2	1993[2)]
IEC 60068-2-6	-[1)]	Environmental testing Part 2: Tests - Test Fc: Vibration (sinusoidal)	EN 60068-2-6	1995[2)]
IEC 60068-2-14	-[1)]	Environmental testing Part 2: Tests - Test N: Change of temperature	EN 60068-2-14	1999[2)]
IEC 60068-2-29	-[1)]	Environmental testing Part 2: Tests - Test Eb and guidance: Bump	EN 60068-2-29	1993[2)]
IEC 60068-2-30	-[1)]	Environmental testing Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle)	EN 60068-2-30	2005[2)]
IEC 60068-2-64	-[1)]	Environmental testing Part 2: Test methods - Test Fh: Vibration, broad-band random (digital control) and guidance	EN 60068-2-64	1994[2)]
IEC 60068-2-78	-[1)]	Environmental testing Part 2-78: Tests - Test Cab: Damp heat, steady state	EN 60068-2-78	2001[2)]
IEC 60300-2	-[1)]	Dependability management Part 2: Guidelines for dependability management	EN 60300-2	2004[2)]
IEC 61165	-[1)]	Application of Markov techniques	EN 61165	2006[2)]
IEC 61649	-[1)]	Goodness-of-fit tests, confidence intervals and lower confidence limits for Weibull distributed data	-	-
ISO 2041	-[1)]	Vibration and shock - Vocabulary	-	-

[1)] Undated reference.

[2)] Valid edition at date of issue.

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
IEC
61163-1

Deuxième édition
Second edition
2006-06

Déverminage sous contraintes –

Partie 1:
Assemblages réparables fabriqués en lots

Reliability stress screening –

Part 1:
Repairable assemblies manufactured in lots

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Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

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For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

RELIABILITY STRESS SCREENING –

Part 1: Repairable assemblies manufactured in lots

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 61163-1 has been prepared by IEC technical committee 56: Dependability.

This second edition cancels and replaces the first edition published in 1995.

The main changes with respect to the previous edition are as follows:

– alignment of terminology on Weibull distribution with the future (second) edition of IEC 61649 (currently a Committee Draft);
– inclusion of a procedure for starting an RSS process without previous information;
– inclusion of highly accelerated stress screening; and
– inclusion of combinations of stresses.

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

FDIS	Report on voting
56/1102/FDIS	56/1118/RVD

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.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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.

INTRODUCTION

Quality control and good design are prerequisites for reliability. However, in cases where an assembly has an unacceptably low reliability in the early failure period, a reliability screening process may be necessary.

An unacceptably low reliability level can be different from one customer to another, or can be based on general market requirements.

Reliability stress screening (RSS) and reliability growth programmes both aim at improvements in the reliability found by the user. However, the two methods are different in principle:

– a reliability growth programme is a development activity, the purpose of which is to improve the inherent reliability performance of the assemblies by effecting changes to the design (see IEC 61014 and IEC 61164);
– the purpose of reliability stress screening is to detect and remove flaws; it is part of the production process, and should not be relied upon to reveal inadequacies in design.

Furthermore, the two methods affect the reliability performance differently. This is illustrated in Figure 1. In principle, a reliability screening programme "cuts away" the early failure period (or part thereof), while a reliability growth programme reduces the overall failure rate level. A reliability growth programme may affect the need for a reliability screening programme if the flaws are of such a nature that they can be prevented from being present at all.

The user of this standard should be aware that reliability stress screening does not improve the intrinsic reliability of the assemblies under consideration and, where possible, should be made unnecessary by reliability growth programmes and/or quality control.

In this standard the term "item" is used when it is not necessary to distinguish between components, assemblies and system(s).

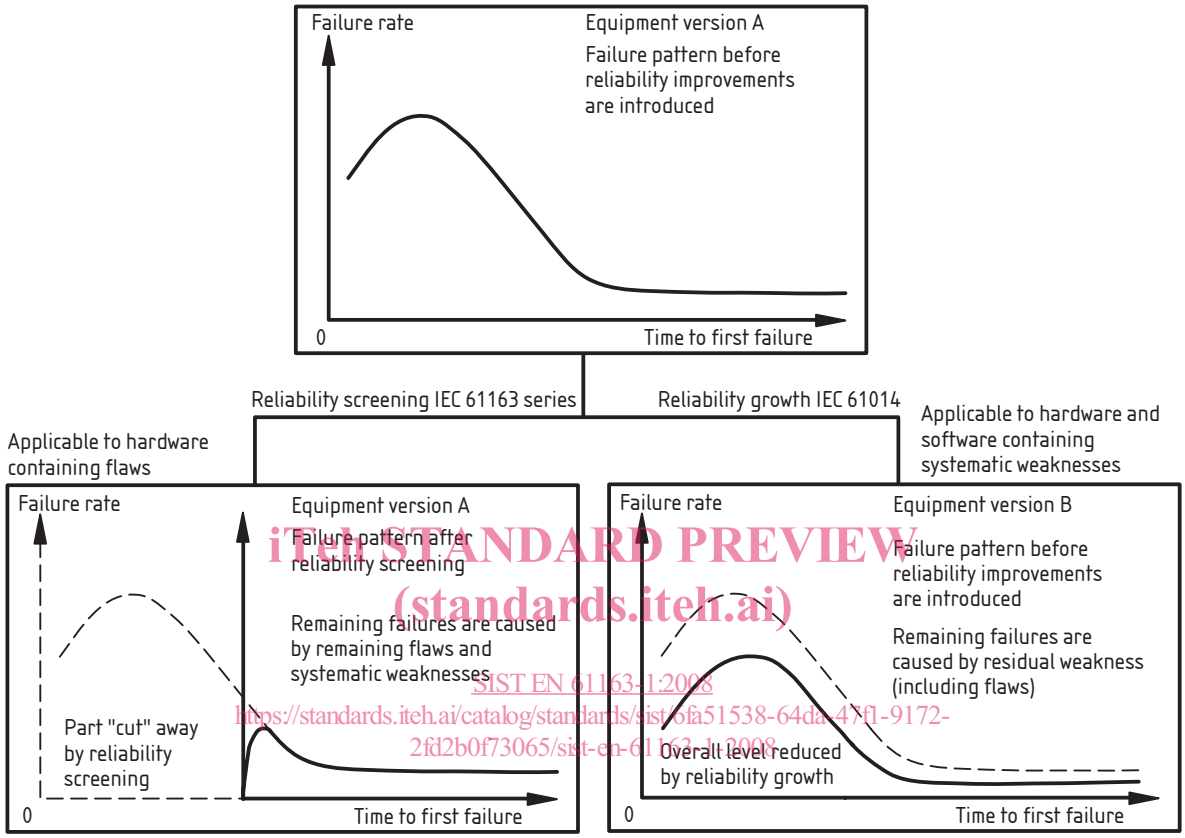
The specific purpose of carrying out a reliability screening process is to detect and remove flaws in hardware assemblies before they reach the customer, or are assembled into higher-level products. This means that, in principle, every hardware assembly under consideration should be included when a reliability screening process is introduced into a production process.

Reliability screening may cover hardware assemblies of different types and at different levels of the manufacturing process. This standard covers composite items – assemblies which are intended to be repaired. Once the allowable fraction of weak assemblies has been specified, the methods in this standard lead to the most economical screening process for assemblies that are manufactured in lots. This is because not all types of assemblies need to be subjected to a reliability screening process. Only the types of assemblies likely to contain flaws should be included. Furthermore, the extent (stress conditions, duration, etc.) to which these selected assembly types will be subjected to screening needs to be minimized.

In reliability stress screening the flaws are precipitated into failures by exposure of the assemblies to a suitable stress, for example environmental stress, operational stress, or a combination of these. Reliability stress screening is often called environmental stress screening (ESS).

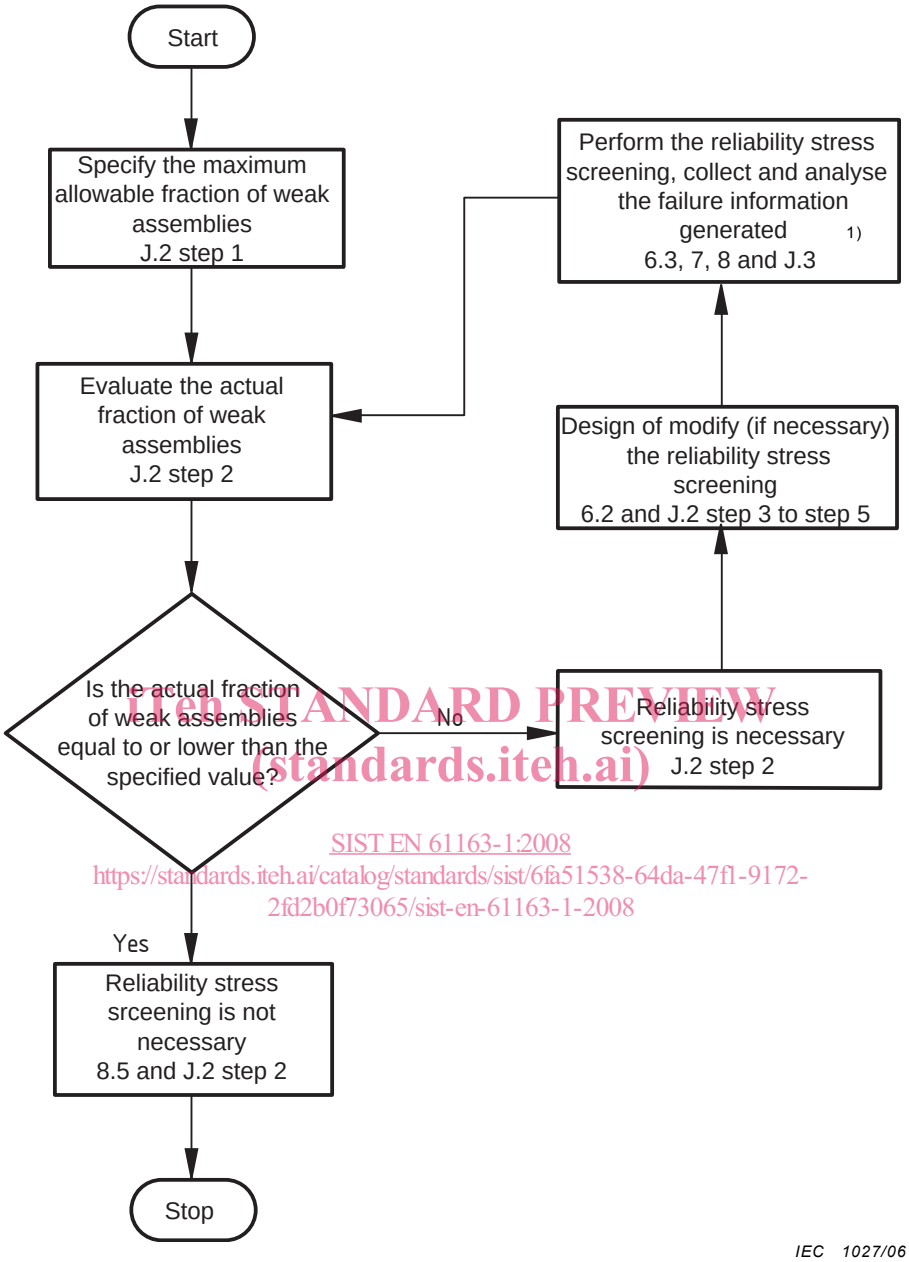
If rogue components are known about and proved to originate in the component manufacturing process, it is much more effective to use screening e.g. burn-in of the rogue components in question instead of the assembly. However screening a component cannot remove flaws introduced in the assembly process (e.g. soldering, handling (ESD) etc.).

The typical steps in a reliability stress screening process are illustrated in Figure 2.



NOTE This standard addresses reliability screening only. For reliability growth see IEC 61014 and IEC 61164.

Figure 1 – Conceptual difference between reliability screening and growth



1) The result of the analysis of the failure causes may be used in a reliability growth and quality control programme.

Figure 2 – Typical flow for the design and modifications of reliability stress screening processes for repairable assemblies