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Ledning av tillförlitlighet – Del 3-1: Vägledning – Metoder för tillförlitlighetsanalys

*Dependability management –
Part 3-1: Application guide –
Analysis techniques for dependability –
Guide on methodology*

Som svensk standard gäller europastandarden EN 60300-3-1:2004. Den svenska standarden innehåller den officiella engelska språkversionen av EN 60300-3-1:2004.

Nationellt förord

Europastandarden EN 60300-3-1:2004^{*)}

består av:

- **europastandardens ikraftsättningsdokument**, utarbetat inom CENELEC
- **IEC 60300-3-1, Second edition, 2003 - Dependability management - Part 3-1: Application guide - Analysis techniques for dependability - Guide on methodology**

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**Dependability management
Part 3-1: Application guide –
Analysis techniques for dependability –
Guide on methodology
(IEC 60300-3-1:2003)**

Gestion de la sûreté de fonctionnement
Partie 3-1: Guide d'application -
Techniques d'analyse de la sûreté
de fonctionnement –
Guide méthodologique
(CEI 60300-3-1:2003)

Zuverlässigkeitsmanagement
Teil 3-1: Anwendungsleitfaden –
Verfahren zur Analyse der Zuverlässigkeit -
Leitfaden zur Methodik
(IEC 60300-3-1:2003)

This European Standard was approved by CENELEC on 2004-09-01. 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.

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CENELEC

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

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Foreword

The text of the International Standard IEC 60300-3-1:2003, prepared by IEC TC 56, Dependability, was submitted to the formal vote and was approved by CENELEC as EN 60300-3-1 on 2004-09-01.

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) | 2005-09-01 |
| – latest date by which the national standards conflicting with the EN have to be withdrawn | (dow) | 2007-09-01 |

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60300-3-1:2003 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 60300-2	NOTE	Harmonized as EN 60300-2:1996 (not modified).
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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 Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60050-191	1990	International Electrotechnical Vocabulary (IEV) Chapter 191: Dependability and quality of service	-	-
IEC 60300-3-2	1993	Dependability management Part 3: Application guide – Section 2: Collection of dependability data from the field	-	-
IEC 60300-3-4	1996	Part 3: Application guide – Section 4: Guide to the specification of dependability requirements	-	-
IEC 60300-3-5	2001	Part 3-5: Application guide - Reliability test conditions and statistical test principles	-	-
IEC 60300-3-10	2001	Part 3-10: Application guide - Maintainability	-	-
IEC 60706-1	1982	Guide on maintainability of equipment Part 1 - Sections 1, 2 and 3: Introduction, requirements and maintainability programme	-	-
IEC 60706-2	1990	Part 2 - Section 5: Maintainability studies during the design phase	-	-
IEC 60812	1985	Analysis techniques for system reliability - Procedure for failure mode and effects analysis (FMEA)	HD 485 S1	1987
IEC 61078	1991	Analysis techniques for dependability - Reliability block diagram method	EN 61078	1993
IEC 61165	1995	Application of Markov techniques	-	-
IEC 61709	1996	Electronic components - Reliability - Reference conditions for failure rates and stress models for conversion	EN 61709	1998

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61882	2001	Hazard and operability studies (HAZOP studies) - Application guide	-	-
ISO 9000	2000	Quality management systems - Fundamentals and vocabulary	EN ISO 9000	2000

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INTRODUCTION

The analysis techniques described in this part of IEC 60300 are used for the prediction, review and improvement of reliability, availability and maintainability of an item.

These analyses are conducted during the concept and definition phase, the design and development phase and the operation and maintenance phase, at various system levels and degrees of detail, in order to evaluate, determine and improve the dependability measures of an item. They can also be used to compare the results of the analysis with specified requirements.

In addition, they are used in logistics and maintenance planning to estimate frequency of maintenance and part replacement. These estimates often determine major life cycle cost elements and should be carefully applied in life cycle cost and comparative studies.

In order to deliver meaningful results, the analysis should consider all possible contributions to the dependability of a system: hardware, software, as well as human factors and organizational aspects.

DEPENDABILITY MANAGEMENT –

Part 3-1: Application guide – Analysis techniques for dependability – Guide on methodology

1 Scope

This part of IEC 60300 gives a general overview of commonly used dependability analysis techniques. It describes the usual methodologies, their advantages and disadvantages, data input and other conditions for using various techniques.

This standard is an introduction to selected methodologies and is intended to provide the necessary information for choosing the most appropriate analysis methods.

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 60050(191):1990, *International Electrotechnical Vocabulary (IEV) – Chapter 191: Dependability and quality of service*

IEC 60300-3-2:1993, *Dependability management – Part 3: Application guide – Section 2: Collection of dependability data from the field*

IEC 60300-3-4:1996, *Dependability management – Part 3: Application guide – Section 4: Guide to the specification of dependability requirements*

IEC 60300-3-5:2001, *Dependability management – Part 3-5: Application guide – Reliability test conditions and statistical test principles*

IEC 60300-3-10:2001, *Dependability management – Part 3-10: Application guide – Maintainability*

IEC 60706-1:1982, *Guide on maintainability of equipment – Part 1: Sections One, Two and Three – Introduction, requirements and maintainability programme*

IEC 60706-2:1990, *Guide on maintainability of equipment – Part 2: Section Five – Maintainability studies during the design phase*

IEC 60812:1985, *Analysis techniques for system reliability – Procedure for failure mode and effects analysis (FMEA)*

IEC 61078:1991, *Analysis techniques for dependability – Reliability block diagram method*

IEC 61165:1995, *Application of Markov techniques*

IEC 61709:1996, *Electronic components – Reliability – Reference conditions for failure rates and stress models for conversion*

IEC 61882:2001, *Hazard and operability studies (HAZOP studies) – Application guide*

ISO 9000:2000, *Quality management systems – Fundamentals and vocabulary*