Irish Standard
I.S. EN 62502:2010

Analysis techniques for dependability - Event tree analysis (ETA) (IEC 62502:2010 (EQV))

I.S. EN 62502:2010

Incorporating amendments/corrigenda issued since publication:

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This document replaces:	*This document is based on:* EN 62502:2010	*Published:* 12 November, 2010

This document was published under the authority of the NSAI and comes into effect on: 23 November, 2010	ICS number: 21.020

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I.S. EN 62502:2010

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62502

November 2010

ICS 21.020

English version

Analysis techniques for dependability - Event tree analysis (ETA)
(IEC 62502:2010)

Techniques d'analyse de la sûreté de fonctionnement - Analyse par arbre d'événement (AAE) (CEI 62502:2010)

Verfahren zur Analyse der Zuverlässigkeit - Ereignisbaumanalyse (ETA) (IEC 62502:2010)

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CENELEC

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

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Ref. No. EN 62502:2010 E

Foreword

The text of document 56/1380/FDIS, future edition 1 of IEC 62502, prepared by IEC TC 56, Dependability, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62502 on 2010-11-01.

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

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)	2011-08-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-11-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62502:2010 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:

[12] ISO/IEC 31010	NOTE	Harmonized as EN 31010.
[13] IEC 60300-3-1:2003	NOTE	Harmonized as EN 60300-3-1:2004 (not modified).
[15] IEC 60812:2006	NOTE	Harmonized as EN 60812:2006 (not modified)
[16] IEC 61078:2006	NOTE	Harmonized as EN 61078:2006 (not modified)
[17] IEC 61165:2006	NOTE	Harmonized as EN 61165:2006 (not modified)
[18] IEC 61508 series	NOTE	Harmonized in EN 61508 series (not modified)
[19] IEC 61511-3:2003	NOTE	Harmonized as EN 61511-3:2004 (not modified)
[20] IEC 61703:2001	NOTE	Harmonized as EN 61703:2002 (not modified)
[22] IEC 62429:2007	NOTE	Harmonized as EN 62429:2008 (not modified)
[23] IEC 62508:2010	NOTE	Harmonized as EN 62508:2010 (not modified)
[24] IEC 62551[1)]	NOTE	Harmonized as EN 62551[2)] (not modified)

[1)] To be published.

[2)] At draft stage.

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	1990	International Electrotechnical Vocabulary (IEV) - Chapter 191: Dependability and quality of service	-	-
IEC 61025	2006	Fault Tree Analysis (FTA)	EN 61025	2007

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ANALYSIS TECHNIQUES FOR DEPENDABILITY – EVENT TREE ANALYSIS (ETA)

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 62502 has been prepared by IEC technical committee 56: Dependability.

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

FDIS	Report on voting
56/1380/FDIS	56/1389/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 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

This International Standard defines the basic principles and procedures for the dependability technique known as Event Tree Analysis (ETA).

IEC 60300-3-1 explicitly lists ETA as an applicable method for general dependability assessment. It is also used in risk and safety analysis studies. ETA is also briefly described in the IEC 60300-3-9.

The basic principles of this methodology have not changed since the conception of the technique in the 1960's. ETA was first successfully used in the nuclear industry in a study by the U.S. Nuclear Regulatory Commission, the so-called WASH 1400 report in the year 1975 [31][1].

Over the following years, ETA has gained widespread acceptance as a mature methodology for dependability and risk analysis and is applied in diverse industry branches ranging from the aviation industry, nuclear installations, the automotive industry, chemical processing, offshore oil and gas production, to defence industry and transportation systems.

In contrast to some other dependability techniques such as Markov modelling, ETA is based on relatively elementary mathematical principles. However, as mentioned in IEC 60300-3-1, the implementation of ETA requires a high degree of expertise in the application of the technique. This is due in part to the fact that particular care has to be taken when dealing with dependent events. Furthermore, one can utilize the close relationship between Fault Tree Analysis (FTA) and the qualitative and quantitative analysis of event trees.

This standard aims at defining the consolidated basic principles of the ETA and the current usage of the technique as a means for assessing the dependability and risk related measures of a system.

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1 Figures in square brackets refer to the bibliography.