

Dependability of products containing reused parts — Requirements for functionality and tests

The European Standard EN 62309:2004 has the status of a
British Standard

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee DS/1, Dependability and terotechnology, which has the responsibility to:

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**Dependability of products containing reused parts –
Requirements for functionality and tests
(IEC 62309:2004)**

Sûreté de fonctionnement des produits
contenant des composants réutilisés -
Exigences pour la fonctionnalité
et les essais
(CEI 62309:2004)

Zuverlässigkeit von Produkten
mit wieder verwendeten Teilen –
Anforderungen an Funktionalität
und Prüfungen
(IEC 62309:2004)

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CENELEC

European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 56/945/FDIS, future edition 1 of IEC 62309, prepared by IEC TC 56, Dependability, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62309 on 2004-09-01.

The following dates were fixed:

- latest date by which the EN has to be implemented
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- 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with the EN have to be withdrawn (dow) 2007-09-01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 62309:2004 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:

ISO 9000	NOTE	Harmonized as EN ISO 9000:2000 (not modified).
ISO 9001	NOTE	Harmonized as EN ISO 9001:2000 (not modified).
IEC 60300-1	NOTE	Harmonized as EN 60300-1:2003 (not modified).
IEC 60300-2	NOTE	Harmonized as EN 60300-1:2004 (not modified).

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INTRODUCTION

The marketplace for products in the 21st century is a rapidly changing one. Now there are new pressures of environment and increased speed of technological growth, causing a need to rethink the old idea of "what constitutes a new product ? ".

The environmental changes have shown the old ways to be very wasteful on the environment and its resources. Owing to the improving quality of manufacturing, most parts have been manufactured with a life expectancy far longer than the user needs, which leads to products and their component parts being disposed of despite the potential usefulness they still contain.

Technological changes too make products both more reliable and also obsolete (or less fashionable) at a faster rate; these two conflicting situations also fuel the cycle of waste.

The solution to this cycle of waste is to introduce a standard that will reassure customers and manufacturers that they can have products produced using parts that have been used previously (qualified-as-good-as-new parts), without loss of dependability.

These parts will have to meet high acceptance criteria to move their status from being second-hand parts onto this new level (qualified-as-good-as-new). These criteria will ensure that not only does the lifetime of the part match or exceed the needs and expectations of the next owner, but also the functions are as good as the alternative unused part.

The first application of this standard should be made at the design stage, where potential "qualified-as-good-as-new " parts will be highlighted for reuse; the acceptance criteria will then be drawn up for all parts highlighted.

Later on, when the products are ready to be recycled, the selected parts have to pass those criteria prior to incorporation into other products.

To protect the customer from misuse of the standard, it will be indispensable to tell the end customer that the product contains "qualified-as-good-as-new" parts, which will not affect its functionality, lifecycle or safety, and that documentation exists showing which parts have been incorporated.

The benefits of this to the manufacturer are in reduced spending on new parts, meeting proposed legislation, and the assurance that this will not affect the customers' perception of their quality.

The benefits to the customer are in receiving a quality product, totally fit for purpose and life expectancy, in the knowledge that the methods used were environmentally friendly, and fully controlled.

DEPENDABILITY OF PRODUCTS CONTAINING REUSED PARTS – REQUIREMENTS FOR FUNCTIONALITY AND TESTS

1 Scope

This International Standard introduces the concept to check the reliability and functionality of reused parts and their usage within new products. It also provides information and criteria about the tests/analysis required for products containing such reused parts, which are declared "qualified-as-good-as-new" relative to the designed life of the product.

In this standard, the term "product" covers electrical, electro-mechanical, mechanical parts or hardware that may contain software. "Qualified-as-good-as-new" does not apply to software products, concepts and ideas.

The purpose of this standard is to ensure by tests and analysis that the reliability and functionality of a new product containing reused parts is comparable to a product with only new parts. This would justify the manufacturer granting the next customer the full warranty of the product with "qualified-as-good-as-new" parts.

NOTE This standard can also be applied in producing product specific standards by technical committees responsible for an application sector.

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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply, some of which are taken from IEC 60050-191. Figure A.3 shows the relationship between the lifetimes defined below. Lifetimes can be measured in operating time-scale or in operating time per calendar time-scale (e.g. cycles per year).

3.1

process

set of interrelated or interacting activities which transforms inputs into outputs

NOTE 1 Inputs to a process are generally outputs of other processes.

NOTE 2 Processes in an organization are generally planned and carried out under controlled conditions to add value.

NOTE 3 A process where the conformity of the resulting product cannot be readily or economically verified is frequently referred to as a "special process".

[ISO 9000:2000, 3.4.1]

3.2

product

result of a process

[ISO 9000:2000, 3.4.2]

NOTE In this standard the term "product" covers hardware (e.g. engine, mechanical part) and processed materials (e.g. lubricant).

3.3

new product

product as a whole, including all of its constituent parts, that has not yet been put into normal use

NOTE A new product may contain one or more "qualified-as-good-as-new" parts.

3.4

qualified-as-good-as-new

quagan

state of a part, which has been put into normal use on one or more occasions but differs from a second-hand part in that it is not just a re-sale, but it is also reconditioned and subjected to fully defined and documented quality checks prior to re-sale, such that it is in all dependability issues as good as new for the as-new designed life of the product (ANDL)

NOTE Qualified-as-good-as-new parts have been qualified as fit for purpose and as dependable as new parts for the as-new designed life (ANDL) of a product. The necessary level of documentation and quality checks depends on the application and the market requirements.

3.5

useful life

under given conditions, time interval beginning at a given instant of time, and ending when the failure intensity becomes unacceptable or when the item is considered un-repairable as a result of a fault

[IEV 191-10-06]

NOTE Equipment may have a useful life of 40 years with certain components changed periodically, thus the useful life of the equipment would be 40 years.

3.6

new designed life

NDL

intended life of a product containing only new parts for the first use within a specific set of operating conditions

NOTE The "new designed life" may depend on the usage of the product, market requirements, efficiency, economy, technology, etc.

3.7

as-new designed life

ANDL

intended life of a product containing at least one reused part for use within a specific set of operating conditions

NOTE The NDL and the ANDL need not be of equal length nor be in any set ratio but it is desirable that the ANDL should not be less than the NDL.

3.8

remaining working life

for a part, the duration of a time interval from a given instant of time to the instant of time when the limiting state of the part is reached