SLOVENSKI STANDARD
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Splošna metoda za ocenjevanje zmožnosti ponovne proizvodnje proizvodov, povezanih z energijo

General method for the assessment of the ability to re-manufacture energy related products

Allgemeines Verfahren zur Bewertung der Wiederaufbereitbarkeit energieverbrauchsrelevanter Produkte

Méthode générale pour l'évaluation de la capacité de refabrication

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This draft European Standard is submitted to CENELEC members for enquiry. Deadline for CENELEC: 2019-01-25.

It has been drawn up by the Technical Committee CEN/CLC/JTC 10. If this draft becomes a European Standard, CEN and 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document [prEN 45553:2018] has been prepared by CEN/CLC/JTC 10 "***Energy-related products - Material Efficiency Aspects for Ecodesign***".

This document is currently submitted to the CENELEC Enquiry.

The following dates are proposed:

• latest date by which the existence of this document has to be announced at national level	(doa)	dor + 6 months
• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	dor + 12 months
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	dor + 36 months (to be confirmed or modified when voting)

The dual logo CEN-CENELEC standardization deliverables, in the numerical range of 45550 – 45559, have been developed under standardization request M/543 of the European Commission and are intended to potentially apply to any product within the scope of the Directive 2009/125/EC concerning Energy-related Products (ErP).

Topics covered in the above standardization request are linked to the following material efficiency aspects:

a) Extending product lifetime

b) Ability to re-use components or recycle materials from products at end-of-life

c) Use of re-used components and/or recycled materials in products

These standards are general in nature and describe or define fundamental principles, concepts, terminology or technical characteristics. They can be cited together with other product, or product-group, standards, e.g. developed by product technical committees.

This document is intended to be used by technical committees when producing horizontal, generic, and product, or product-group, standards.

Note CEN/CENELEC/JTC 10 is a dual logo TC, and uses either CEN or CENELEC foreword templates, as appropriate. The template for the current document is correct at the time of publication.

Introduction

This standard provides a method for accessing the ability of an ErP to be remanufactured. It identifies seven general process steps which are crucial to the remanufacturing process. Each of the seven steps is linked to several attributes of the ErP. Therefore, to assess the ability to remanufacture an ErP these product attributes which are linked to the remanufacture process have to be assessed accordingly. The general assessment method, presented in this document, is intended to be used to develop product-specific standards .

As the terms refurbishment and remanufacturing are used interchangeably in different industry sectors it is necessary to provide guidance to the user of the standard how to distinguish between these two industrial processes.

Remanufacturing is identified as an industrial process where important changes are applied to the ErP in such way that it has to be considered a new product when placed on the market, after finishing the remanufacturing process.

Refurbishment is identified as an industrial process in which no important changes to the energy-related product are made. Checks for basic safety and performance attributes are performed.

1 Scope

This document proposes a general method to assess the ability of ErPs to be remanufactured on a generic level. Where a product specific standard for assessing the ability to remanufacture does not exist, this document can be used for such an assessment.

The assessment of the ability of parts to be remanufactured is not considered in this document.

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.

prEN 45559, *Methods for providing information relating to material efficiency aspects of energy-related products*

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

Note See prCEN/CLC/TR 45550 for additional definitions related to Material Efficiency.

3.1
important change
modification which influences the safety, original performance, purpose or type of the product

Note 1 to entry: to entry: Refer to the EU Blue Guide [1] for conditions under which a product has to be considered as a new product when placing on the market after such changes.

Note 2 to entry: to entry: The person who carries out the changes becomes then the manufacturer with the corresponding obligations.

3.2
remanufacturing
industrial process which creates a product from used products or used parts where at least one important change is made to the product

3.3
refurbishment
industrial process of returning a used product to a satisfactory working condition without making any important changes to the product

3.4
part
hardware or software constituent of a product

3.5
disassembly
process whereby a product is taken apart in such a way that it could subsequently be reassembled and made operational

[SOURCE: IEV 904]

3.6
reprocessing
restore or modify the functionality of a product or part

Note 1 to entry: to entry: Reprocessing may consist of repairing, rework, replacement of worn parts, and/or upgrade of soft- and/or hardware.

3.7
qualified person
person whose competence and knowledge have been obtained by education, training and/or relevant practical experience

Note 1 to entry: to entry: Refer to national requirements which may vary from country to country

[SOURCE ISO/TR 25901-1:2016, 2.5.22]

4 Guidance on how to use this standard

4.1 General guidance

The ability to remanufacture a product is very much dependant on the type of product which is being remanufactured and which remanufacturing process steps are the most relevant to that product.

Users of this standard shall identify the order and importance of each remanufacturing process step for their ErP. They shall evaluate if the link between process steps and product attribute reflects their product group and make amendments where necessary. Each product attribute can be evaluated by the aspects given in sections 5.1.1 to 5.1.5 which are non-exhaustive and general in nature. The user of this standard shall define the relevant aspects for their product group and assess the ability of an ErP to be remanufactured accordingly.

NOTE 1 If a scoring is desired, the user of the standard can develop classes for the different aspects of the product attributes to evaluate them and weight this with the before defined importance of each process step they are represented in.

NOTE 2 If required a list of priority parts can be created which is assessed according to the defined aspects.

4.2 General considerations

A pre-condition to assess the ability of an ErP to be remanufactured involves the ability to create and maintain strict rules of procedures to be applied during every step of the remanufacturing process, ensuring that neither safety nor performance of the product to be remanufactured will be impaired by the remanufacturing process.

It is assumed that an organization performing remanufacturing is able to demonstrate it has identified and formally nominated a qualified person as being the solely responsible person for the remanufactured process.

It is assumed that the organization performing remanufacturing is able to demonstrate that it can guarantee the traceability of products or parts belonging to the remanufacturing process at all times, either by having dedicated remanufacturing lines and/or thorough a traceability system. Also, for the purpose of storage during the remanufacturing process, it is important to identify the ErP and its parts by, for instance, attributing an article number or code that makes its identification simple.

5 General method to assess the ability of an ErP to be remanufacture

5.1 Assessing the ability of an ErP to be remanufactured

5.1.1 General

The ability of an ErP to be remanufactured shall be assessed based on the feasibility of performing the following seven general remanufacturing process steps [2] considered to be key for the remanufacturing of a product. These process steps, which can occur in different order, are:

- Inspection
- Disassembly
- Cleaning
- Reprocessing
- Reassembly
- Testing
- Storage

NOTE 1 Storage will take place at any point in the remanufacturing process

Each remanufacturing process step is linked to one or more product-related attributes that allow the assessment of the ability of a product to be remanufactured. The link between the remanufacturing process steps and product-related attributes is shown in a matrix in Table 1. This matrix shows which product attributes are relevant for the different steps in the remanufacturing process and can be used as a design tool.

NOTE 2 Using this matrix, the designer can easily identify what product attributes are relevant or needed for the different remanufacturing steps; depending on which product is being considered, a step can be of more or less importance and be emphasized or not.

A more detailed description of the product attributes is provided in Clauses 5.1.2 to 5.1.6.

Table 1 — Remanufacturing Attribute Matrix – Showing the link between the remanufacturing process steps and product-related attributes

Product Attribute	Remanufacturing Process Step						
	Inspection	Disassembly	Cleaning	Reprocessing	Reassembly	Testing	Storage
Ease of locating access points and fasteners	X	X			X	X	
Ease of identification and verification	X					X	X
Ease of access	X	X	X	X	X	X	
Ease of disassembly / reassembly		X	X	X	X		X
Wear resistance	X	X	X	X	X	X	X

5.1.2 Ease of locating access points and fasteners

Clear location of access points can facilitate verification of certain conditions, for instance, making clear where to insert the diagnostic equipment to the product. Easy and clear identification of fasteners (points or sequence) will allow for easy disassembly or reassembly of the parts.

The degree of difficulty in locating access points or fasteners can be determined by, for instance, the presence of markings or intuitive product design, influencing positively or negatively the ability of an ErP to be remanufactured. Typical aspect that influence the ease of locating access points and fasteners is:

— Indication of where access points are located (e.g. by markings)

— Indication of where fasteners are located

— Provision of diagrams/drawings with the location of access points and fasteners

The ease of locating access points and fasteners facilitates inspection, testing, disassembly or reassembly and energy-related product or product-group. User of this standard shall determine to which extent the ease of locating access points and fasteners contribute to the ability of a product to be remanufactured. They should also draft a list of aspects that will be used to determine the ability of locating access points and fasteners.

5.1.3 Ease of identification and verification

The degree of difficulty in identifying and / or verifying the working conditions of the ErP and its parts, to determine which parts need to be reprocessed e.g. repaired, reworked, replaced, upgraded, is an important contributor to the overall ability of a product to be remanufactured. Typical aspects that influence the ease of identification and verification of the ErP and its parts are:

— Indication of the functionality

— Indication of wear sensitive parts (e.g. if certain parts do not withstand specific cleaning methods)

— Indication of parts containing hazardous substances

— Indication of the need for special care / handling during the testing in view of e.g. safety of the testing expert, of others, or of the equipment itself

— Information on how to determine the condition to determine its operability

— Access of diagnostics (e.g. embedded diagnostic tools to verify condition)

User of this standard should identify to which extent the ease of identification and verification, as to determine if it is possible or useful to reuse its parts or whether reprocessing, contributes to the ability of a product to be remanufactured. They should draft a list of aspects that will help determine the ability of identification and verification of that specific product or product-group, including verification of aspects critical to safety and performance

5.1.4 Ease of access

In order to facilitate remanufacturing, it can be important that areas which need to be cleaned are accessible, and where special conditions of cleaning are to be applied, clear indication or instructions are provided. Aspects that influence cleaning are:

— Use of materials that prevent the attachment of dirt will reduce the need for cleaning.

— Surfaces to be cleaned should be smooth and wear resistant, as the presence of sharp edges and uneven surface boundaries could attract dirt and decrease the ability to perform the cleaning process