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 remanufacture 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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13.030.50	Recikliranje	Recycling

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English Version

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

Méthode générale pour l'évaluation de la capacité d'un produit lié à l'énergie à être refabriqué

Allgemeines Verfahren zur Bewertung der Wiederherstellungsfähigkeit energieverbrauchsrelevanter Produkte

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

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Contents

Page

European foreword

This document [EN 45553:2020] has been prepared by CEN/CLC/JTC 10 "***Energy-related products - Material Efficiency Aspects for Ecodesign***".

The following dates are fixed:

• latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2021-05-25
• latest date by which the national standards conflicting with this document have to be withdrawn	(dow)	2023-05-25

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This document has been prepared under a standardization request given to CEN and CENELEC by the European Commission and the European Free Trade Association.

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 reuse components or recycle materials from products at end-of-life;

c) Use of reused 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 publications, e.g. developed by product technical committees.

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

Introduction

This document provides a general method for assessing the ability of an energy-related product to be remanufactured, to be used by technical committees when producing horizontal, generic, and product-specific, or product-group, publications. It identifies seven general process steps which are crucial to the remanufacturing process. Each of the seven steps (see 5.1) is linked to several product attributes of the energy-related product (see table 1). These product attributes are evaluated by their criteria described in 5.2.1 to 5.2.5.

As the terms remanufacturing and refurbishment are sometimes used interchangeably in different industry sectors it is necessary to clarify what is meant by remanufacturing in this document. Remanufacturing is identified as an industrial process where at least one change, which influences the safety, original performance, purpose or type of the product, is applied to the energy-related product.

NOTE This document does not cover general methods for assessing the ability of an energy-related product to be refurbished.

1 Scope

This document contains a general method to assess the ability of energy-related products to be remanufactured. It is intended to be used by technical committees when producing horizontal, generic, and product, or product-group, standards.

NOTE 1 Throughout this document, reference to 'user of this document' refers to those members of technical committees that are producing horizontal, generic, and product, or product-group, standards as well as any person using the standard directly.

Assessing the ability of a part that is not considered to be an energy-related product to be remanufactured is not considered in this document.

NOTE 2 To assess the ability of an energy-related product to be remanufactured (i.e. in 5.2.1 to 5.2.5), the described criteria are applied to the parts of the energy-related product.

A scoring system to quantify the ability of an energy-related product to be remanufactured is not covered in this document. Only the criteria for the ability of an energy-related product to be remanufactured are presented 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.

EN 45559:2019, *Methods for providing information relating to material efficiency aspects of energy-related products*

3 Terms, definitions and abbreviations

3.1 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 CLC/prTR 45550 [8] for additional definitions related to Material Efficiency.

3.1.1
remanufacturing
industrial process which produces a product from used products or used parts where at least one change is made which influences the safety, original performance, purpose or type of the product

Note 1 to entry: The product created by the remanufacturing process may be considered a new product when placing on the market. Refer to the EU Blue Guide [1] for additional information.

Note 2 to entry: Refurbishing is a similar concept to remanufacturing except that it does not involve changes influencing safety, original performance, purpose or type of the product. It is not covered by this standard.

3.1.2
part
hardware, firmware or software constituent of a product

[SOURCE: EN 45554:2020, 3.1.1]

3.1.3
disassembly
process whereby a product is taken apart in such a way that it could subsequently be assembled and made operational

[SOURCE: IEV-904-04-01, modified: Note 1 to entry deleted]

3.1.4
reprocessing
restoration or modification of the functionality of a product or part

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

3.2 Abbreviations

The following abbreviations have been used in this document

ErP Energy-related product

4 How to use this document

The ability of an ErP to be remanufactured is product-group specific and depends on which remanufacturing process steps are relevant to that product.

Users of this document shall identify the order and importance of each remanufacturing process step for the product-group under investigation. They shall evaluate the applicability of the link between process steps and product attributes (Table 1) and establish criteria for relevant product attributes, based on the criteria presented in 5.2.1 to 5.2.5. The criteria presented in this document are general in nature and non-exhaustive.

Where this document has been used to develop a product-specific or product-group standard for assessing the ability of an ErP to be remanufactured, the provisions of that standard shall be used when assessing the ability of an ErP to be remanufactured.

NOTE In case quantification of the ability of an ErP to be remanufactured would be desired, a scoring system could be developed based on the criteria presented in this document.

5 General method to assess the ability of an energy-related product to be remanufactured

5.1 Remanufacturing process steps and product attributes

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]. These process steps, which can occur more than once and in a different order than presented below, are:

- Inspection
- Disassembly
- Cleaning
- Reprocessing
- Assembly
- Testing
- Storage

Each remanufacturing process step is linked to one or more product attributes that shall be used for the assessment of the ability of a product to be remanufactured. The link between the remanufacturing process steps and product attributes is shown in Table 1. Table 1 shows which product attributes are relevant for the different steps in the remanufacturing process.

Table 1 can be used to identify what product attributes are relevant or needed for the different remanufacturing process steps. Depending on which product-group 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 5.2.

Table 1 — Link between the remanufacturing process steps and product attributes

Product Attribute	Remanufacturing Process Step						
	Inspection	Disassembly	Cleaning	Reprocessing	Assembly	Testing	Storage
Ability to be identified	X					X	X
Ability to locate access points and fasteners		X			X		
Accessibility of parts	X	X	X	X	X	X	
Ability to be disassembled/ assembled		X			X		X
Wear and damage resistance during the remanufacturing process steps	X	X	X	X	X	X	X

5.2 Criteria for assessing the product attributes

5.2.1 Evaluation of the product attribute “Ability to be identified”

The ability to be identified describes the ability to determine the condition of the ErP and its parts and the functionality of the ErP and its parts. It also describes the ability to determine which parts need reprocessing e.g. repair, reworked, replaced or upgraded and which parts might need special care. Furthermore, it covers the ability to determine the original legal requirements applying to the ErP by giving information on the applicable legislation at the time the product was placed on the market. It is applicable to the parts of the ErP and the product itself and is an element of the assessment of the ability to be remanufactured.

The user of this document shall determine to what extent the product attribute “Ability to be identified” contributes to the ability of an ErP or product group to be remanufactured. If this product attribute is considered to impact the ability of the ErP to be remanufactured, a list of criteria that will be used to determine this product attribute shall be drafted.

Typical criteria that influence the ease of identification of the ErP and its parts are:

- Access for diagnostics (e.g. embedded or external diagnostic tools to verify condition);
- Information on how to determine its functionality;
- Information on the status of the functionality (e.g. if the different functions of the ErP are still operational);
- Information on wear-sensitive parts (e.g. if certain parts do not withstand specific cleaning methods);