
Okoljsko primerna zasnova za elektroniko, vključno s pristopom k okoljski deklaraciji izdelkov in specifikacijam za oceno učinkovitosti materialov

Ecodesign for power electronics including approach for environmental product declarations and specifications for the material efficiency assessment

Écoconception pour l'électronique de puissance intégrant l'approche pour les déclarations environnementales de produits et les spécifications pour l'évaluation de l'utilisation rationnelle des matériaux

Ta slovenski standard je istoveten z: prEN 50743:2025

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**Ecodesign for power electronics including approach for
environmental product declarations and specifications for the
material efficiency assessment**

Ecoconception pour les électroniques de puissance
comprenant l'approche pour des déclarations
environnementales produits et des spécifications pour
l'évaluation en efficacité des matériaux

To be completed

This draft European Standard is submitted to CENELEC members for enquiry.
Deadline for CENELEC: 2025-12-05.

It has been drawn up by CLC/TC 22X.

If this draft becomes a European Standard, 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.

This draft European Standard was established by CENELEC in three official versions (English, French, German).
A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

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.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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103 **European foreword**

104 This document (prEN 50743:2025) has been prepared by CLC/TC 22X “ Power Electronics”.

105 This document is currently submitted to the Enquiry.

106 The following dates are proposed:

- latest date by which the existence of this document has to be announced at national level (doa) dav + 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) dav + 12 months
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) dav + 36 months (to be confirmed or modified when voting)

107 This document will supersede EN 50598-3 and all of its amendments and corrigenda (if any).

108 This document is read in conjunction with EN IEC 63366.

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Introduction

This document has been drafted under a CLC/TC 22X Committee initiative in the context of growing concerns in the global and European regulatory and standardization activities that are currently in process.

Based on a NWIP prepared by the TC22X WG9 under the CENELEC Project reference PR = 73372: “Ecodesign for power electronics including approach for environmental product declarations and specifications for the material efficiency assessment”, the CLC/TC 22X Secretariat has prepared a Program of Work Item (PWI) that has been registered under the CENELEC Project reference PR = 78985: “Ecodesign for power electronics including approach for environmental product declarations and specifications for the material efficiency assessment”.

Under the NWIP a call for Convenor and experts has been circulated for building the Committee team CLC/TC 22X/WG 9 “Material Efficiency for Circular Economy”. Based on a CLC/TC 22X/WG 9 decision, the PWI standardization work started end of 2023. The CLC/TC22X Working Group 9 is the standardization working group for drafting this prEN 50743 under CENELEC project 78985, based on the already published homegrown standard EN 50598-3:2013. This EN has not been prepared as the reply to a European Commission (EC) Standardization Request (SReq). But if agreed, it should become a standard supporting the EC Ecodesign for Sustainable Product Regulation (ESPR): (EU) 2024/1781 for which no Regulation Delegated Acts or SReq have been published yet for products and systems in the scope of the CLC/TC 22X Committee. The Power Electronics Converter Systems (PECS) in the focus for this document are mainly VSDs (BDM, CDM), UPS, or GCPCs (see scope definition for the complete list).

This project is clearly a European Economic Area (EEA) topic due to its connection to the current EC Ecodesign Directive: 2009/125/EC, to the recently published EC Ecodesign for Sustainable Product Regulation (ESPR): (EU) 2024/1781, and the EU Circular Economy Action Plan [6]. But, in a second step, in case of global interest and depending on international horizontal standards issued from IEC/TC 111 (Environmental aspect for EEE), this document should be offered and maintained at the IEC level for possible global applicability. To facilitate the future standard allocation to IEC from the CENELEC offer, an IEC/TC 22/AG 12 (Advisory Group 12) has been set up for establishing a cooperation and information exchange, to receive advice, comments, proposals from non-European experts focusing on this CLC/TC 22X Committee project.

For the relationship with EU Legislation, an informative Annex ZZ will be drafted for giving the link between clauses of this document and the future European Commission Delegated Act to be published under the ESPR Regulation and possibly be adopted in early 2029.

This document provides a relevant, consistent, and harmonized approach for specifying substantiation and respective requirements on the material efficiency aspects of Power Electronics Converter Systems (PECS) for supporting life cycle assessment (LCA), using product-specific rules (PSR). It will also facilitate and harmonize the way to prepare the Environmental Product Declarations (EPD). The use of this document should benefit from the specification of durability, the ability to repair, reuse, upgrade, remanufacture, the recyclability, recoverability, the proportion of re-used components or recycled material content, the declaration of Critical Raw Material (CRM) as well as the information provided to the different stakeholders, including via the Digital Product Passport (DPP).

This project does not intend to specify the Environmentally Conscious Design (ECD) of a PECS but should focus on assessment and measurement as well as relevant information to be provided on material efficiency aspects. It is a standardization work for preparing the adaptability and applicability of existing generic approaches for such a PECS product-oriented standard. This document will support the necessary circularity requested by the different scenarios of life cycle analysis (LCA), aiming for substantiating the quantitative green claims provided by the European regulations, already published or still to come. For that purpose, in addition to deriving and adapting the EN 4555x series for PECS, this document considers EN IEC 63366:2025 for the benefit of the manufacturers dealing with their product LCA. This document should support the coming EC Ecodesign for Sustainable Product Regulation (ESPR): (EU) 2024/1781 and related Delegated Acts to be prepared for all categories of products and systems defined in its scope.

This document suggests common PSR for the Power Electronics Converter Systems that are in the scope of the CLC/TC 22X Committee as much as possible. When particular PSR or other specific requirements can only be related to a dedicated product or system (e.g. for Variable Speed Drives only or any other PECS within the