SLOVENSKI STANDARD
oSIST prEN 50598-3:2014

01-januar-2014

Ekološko snovanje (ecodesign) motornih pogonskih sistemov, motornih zaganjalnikov, močnostne elektronike in njihove aplikacije, ki jih ti poganjajo - 3. del: Kvantitativni pristop ekološkega snovanja z ocenjevanjem življenjskega cikla, vključno s pravili za kategorijo proizvoda in vsebino deklaracij o okolju

Ecodesign for power drive systems, motor starters, power electronics & their driven applications - Part 3: Quantitative eco design approach through life cycle assessment including product category rules and the content of environmental declarations

Ökodesign für Antriebssysteme, Motorstarter, Leistungselektronik und deren angetriebene Einrichtungen -- Teil 3: Quantitativer Ökodesign-Ansatz mittels Ökobilanzierung einschließlich Produktkategorieregeln und dem Inhalt von Umweltdeklarationen

Ecoconception des entraînements électriques de puissance, des démarreurs de moteur, de l'électronique de puissance et de leurs applications entraînées -- Partie 3: Approche quantitative d'écoconception par l'évaluation du cycle de vie, comprenant les règles relatives aux catégories de produits et le contenu des déclarations environnementales

Ta slovenski standard je istoveten z: **prEN 50598-3:2013**

ICS:

13.020.99	Drugi standardi v zvezi z varstvom okolja	Other standards related to environmental protection
31.020	Elektronske komponente na splošno	Electronic components in general

oSIST prEN 50598-3:2014 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 50598-3

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ICS

English version

Ecodesign for power drive systems, motor starters, power electronics & their driven applications - Part 3: Quantitative eco design approach through life cycle assessment including product category rules and the content of environmental declarations

Ecoconception des entraînements électriques de puissance, des démarreurs de moteur, de l'électronique de puissance et de leurs applications entraînées - Partie 3: Approche quantitative d'écoconception par l'évaluation du cycle de vie, comprenant les règles relatives aux catégories de produits et le contenu des déclarations environnementales

Ökodesign für Antriebssysteme, Motorstarter, Leistungselektronik und deren angetriebene Einrichtungen - Teil 3: Quantitativer Ökodesign-Ansatz mittels Ökobilanzierung einschließlich Produktkategorieregeln und dem Inhalt von Umweltdeklarationen

This draft European Standard is submitted to CENELEC members for CENELEC enquiry. Deadline for CENELEC: 2014-02-21.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey 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.

CENELEC

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

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Foreword

This document [prEN 50598-3:2013] has been prepared by CLC/TC 22X "Power electronics".

This document is currently submitted to the Enquiry.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

The TC22X Working Group 6 as being the standardization Task Force for dealing with the Mandate M/476 from European Commission for standardization in the field of variable speed drives and/or Power Drive System products has been set a close collaboration with several other technical committees (i.e. CLC/TC2; CLC/TC17B; CEN TC 197) in order to provide a comprehensive standard for energy efficiency and eco design requirements.

Key points:

— Clear requirements how to achieve an energy efficient driven equipment using a power drive system

— Requirements and limits for IE-classes for power electronic converters

— Requirements and limits for IES-classes for Power Drive Systems (PDS)

— Loss determination of the PDS and requirements for the link to the driven equipment in order to determine the energy efficiency classification/evaluation of the extended product

— Requirements how to achieve the environmental conscious design and environmental declaration of PDS

It is the intention of the working group that this document, once finalised as European standard, will be further processed to an international consensus in IEC according to the UAP procedure agreement between CENELEC and IEC.

Within the TC22X Working Group 6 a Task Force (TF2) has been set up for dealing with the environmental aspects of eco design through harmonized methods of assessing a product’s environmental performance and providing an environmental declaration for components of a motor system.

Since currently there is no horizontal approach on environmental declarations and a underlying life cycle assessment, within the standard an environmental declaration program according to EN ISO 14025 - including basic product category rules - is set up, whereas this TC22X WG6 TF2 is acting as the environmental declaration program operator. The program instructions can be found in the annex. If the approach is standardized for electronic and electro technical equipment through a harmonized standard, content like e.g. the basic category rules (Clause 7) will become obsolete whereas this to be issued standard applies instead. Furthermore product specific requirements, e.g. defined in the Annex D, still shall be followed.

Introduction

The CENELEC TC22X Technical Committee has circulated on last 2010-03-31 for a short period of time the CLC/TC22X/Sec0100/DC document including the Mandate M/476 from European Commission for standardization in the field of variable speed drives and/or Power Drive System products.

As the PDS contains converter driven motors, the additional requirements for measuring of the energy efficiency of those motors with non-sinusoidal supply and the labeling for the whole PDS are also included. This covers the requirements coming from the Mandate M/470.

The horizontal Eco Design mandate, M/495, has been accepted at the end of 2011 by CEN and CENELEC, and requires to provide harmonized methods for measuring a product's environmental performance with a life cycle assessment and to provide an environmental footprint.

The document is based on the CENELEC Technical board document referenced BT137/DG8058/INF also reproducing this EC-Mandate.

The TC22X Working Group 6 as being the standardization Task Force for dealing with this Mandate has anticipated that a close collaboration with several other technical committees (i.e. CLC/TC2; CLC/TC17B) should be set.

Therefore CLC TC22X Committee has taken its responsibility this field and has started a standardization work to clarify all aspects in field of Energy efficiency and Eco-design requirements for Power electronics, Switchgear, Control gear, and Power drive systems and their industrial applications.

The sometimes controversial requirements in the field of these tasks are illustrated in Figure 1. The work has been agreed to provide the reasonable target as a best compromise in this field.

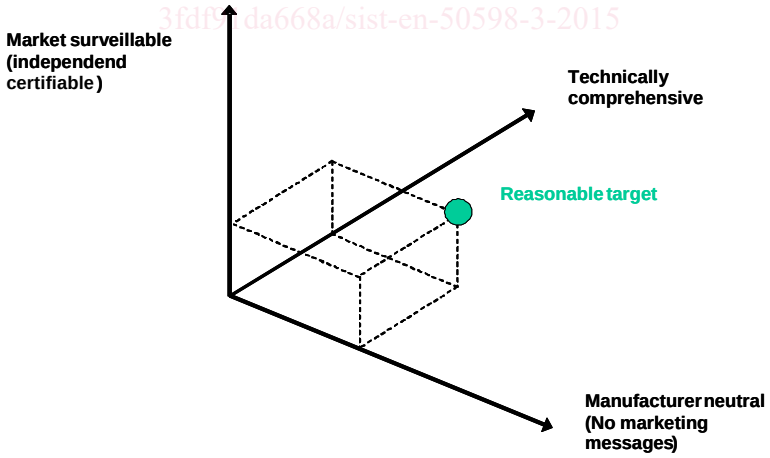


Figure 1 — Illustration of controversial requirements for the Energy related product (ErP) Standardization

EN 50598 is developed under the CENELEC projects number 24602 to 24604 for compliance with requirements from the horizontal mandate M/495. EN 50598 "*Ecodesign for power drive systems, motor starters, power electronics & their driven applications*" will consist of the following parts:

Part 1: General requirements for setting energy efficiency standards for power driven equipment using the extended product approach (EPA), and semi analytic model (SAM);

Part 2: Energy efficiency indicators for power drive systems and motor starters;

Part 3: Quantitative eco design approach through life cycle assessment including product category rules and the content of environmental declarations.

The parts together will provide the appropriate set of standards also covering the individual mandates M/470, M/476, M/498, M/500 already in reference within the mandate M/495 and the upcoming mandates for standardization of other power driven applications.

Table 1 — Mandates of the European Commission given to CEN, CENELEC and ETSI and how they are solved by the individual parts of the standardization of CLC TC 22X WG 6

Mandates	Part 1	Part 2	Part 3
M/470 Motors		✓	✓
M/476 PDS		✓	✓
M/495 Horizontal all future Applications	✓	✓	✓
M/488 HVAC comfort fans	✓	✓	(✓)
M/498 Pumps	✓	✓	(✓)
M/500 Compressors	✓	✓	(✓)

NOTE Geared motors (motor plus gearbox) shall be treated for efficiency classes like a Power Drive system (converter plus motor). See IEC 60034-30-1 for determination of the losses of a geared motor. The efficiency class of a gearbox itself is under consideration.

1 Scope

This part of EN 50598 specifies the process and requirements to implement environmental conscious product design principles, to evaluate eco-design performance and to communicate the potential environmental impacts for power driven systems, motor starters, power electronics (e.g. Complete Drive Modules, CDM) used in motor driven applications (motor driven loads) for low voltage (less than 1000V) and in the power range of 0,12 kW up to 1000 kW during the whole life cycle.

It defines the content for 2 different environmental declaration types:

— The basic version, an environmental declaration type II, with basic data and qualitative statements on eco design, as defined in EN ISO 14021

— The full version, an environmental declaration type III as defined in EN ISO 14025, including quantitatively evaluated potential environmental impacts. For that product category rules [PCR] for motor system components are included to assure an harmonized life cycle assessment methodology.

This part of EN 50598 is harmonized with the applicable generic and horizontal environmental standards and contains the additional details relevant for the above mentioned products.

This part of EN 50598 applies to the components of a motor system as defined in EN 50XXX-1.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 14006, *Environmental Management Systems – Guideline for incorporating eco-design*

EN ISO 14040, *Environmental management – Life cycle assessment*

EN ISO 14044, *Environmental management – Life cycle assessment – requirements and guidelines*

EN ISO 14020, *Environmental labels and declarations – general principals*

EN ISO 14021, *Environmental labels and declarations – Self-declared environmental claims (Type II environmental labeling)*

EN ISO 14025, *Environmental labels and declarations – Self-declared environmental claims (Type III environmental labeling)*

IEC 62430, *Environmental conscious design for electrical and electronic products*

IEC Guide 209, *Environmental aspects – Inclusion in electrotechnical product standards*

IEC/TR 62635, *Guidelines for end-of-life information provided by manufacturers and recyclers and for recyclability rate calculation of electrical and electronic equipment*

IEC 62474, *Material declaration for IEC*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050(161) and the following apply.

3.1
end of life
Life cycle stage of a product starting when it is removed from its intended use phase

[SOURCE: IEC/TR 62635]

3.2
end of life treatment
any operations after a waste has been handed over to a facility for recovery or preparation for disposal. This includes dismantling, material separation and disposal

[SOURCE: IEC/TR 62635]

3.3
environment
surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation

Note 1 to entry: Surroundings in this context extend from within an organization to the global system.

[SOURCE: EN ISO 14001:2004, 3.5]

3.4
environmental aspect
element of an organization's activities or products that can interact with the environment

Note 1 to entry: A significant environmental aspect has or can have a significant environmental impact.

[SOURCE: EN ISO 14001:2004, 3.6, modified]

3.5
environmental claim
statement, symbol or graphic that indicates an environmental aspect of a product, a component or packaging

Note 1 to entry: An environmental claim may be made on product or packaging labels, through product literature, technical bulletins, advertising, publicity, telemarketing, as well as through digital or electronic media such as the Internet.

[SOURCE: EN ISO 14021:1999 + A1:2011, 3.1.4]

3.6
environmentally conscious design
ECD
systematic approach which takes into account environmental aspects in the design and development process with the aim to reduce adverse environmental impacts

[SOURCE: IEC 62430:2009]

3.7
environmentally conscious design tool
formalized method which facilitates qualitative or quantitative analysis, comparison and/or solution finding during the ECD process

3.8
environmental declaration program
voluntary program for the development and use of **Type III environmental declarations** (3.2), based on a set of operating rules

[SOURCE: EN ISO 14025:2010]

3.9
environmental impact
any change to the environment, whether adverse or beneficial, wholly or partly resulting from an organization's environmental aspects

[SOURCE: EN ISO 14001:2004, 3.7]

3.10
environmental label
environmental declaration
claim which indicates the environmental aspects of a **product** (3.11) or service, for example a type I, a type II or a type III environmental declaration or a product environmental footprint

Note 1 to entry: An environmental label or declaration may take the form of a statement, symbol or graphic on a product or package label, in product literature, in technical bulletins, in advertising or in publicity, amongst other things.

[SOURCE: EN ISO 14020:2000, modified]

3.11
environmental declaration type II
environmental declaration (3.10) providing self-declared environmental claims

[SOURCE: EN ISO 14021]

3.12
environmental declaration type III
environmental declaration (3.10) providing quantified environmental data using predetermined parameters and, where relevant, additional environmental information

[SOURCE: EN ISO 14025:2010]

Note 1 to entry: The predetermined parameters are based on the EN ISO 14040 series of standards, which is made up of EN ISO 14040 and EN ISO 14044.

Note 2 to entry: The additional environmental information may be quantitative or qualitative

3.13
environmental declaration verification
The verification of the environmental declaration is mandatory for type III declarations compliant to EN ISO 14025, in terms of this standard and the program operator (3.35) the verification takes place through a process verification within the company's management system.

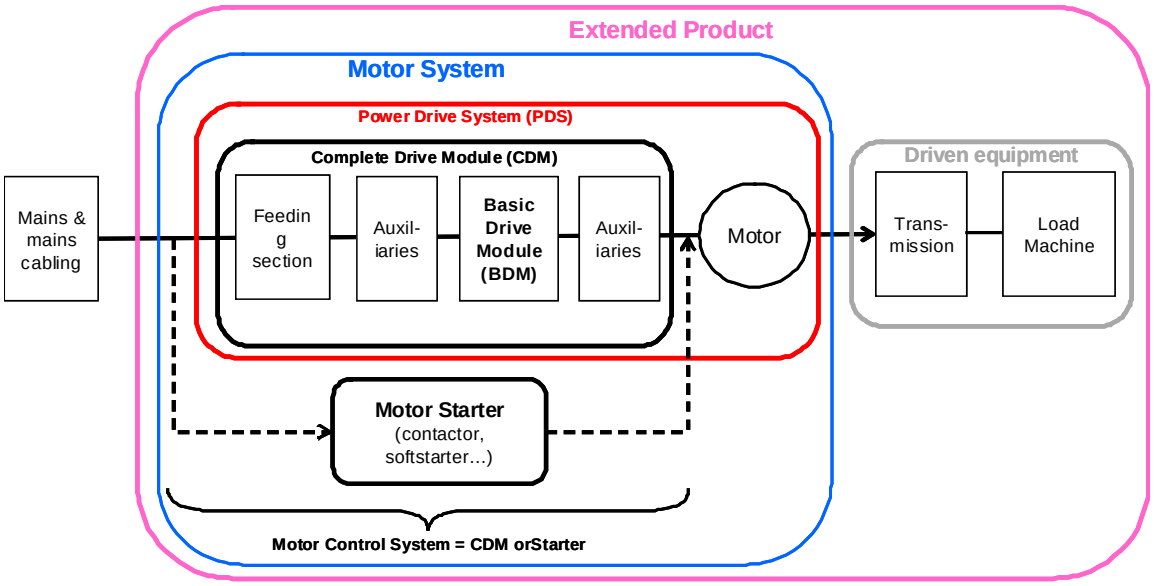
3.14
environmental management system
part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedure, processes, and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy

[SOURCE: EN ISO 14001:2004, 3.8, modified]

3.15
environmental parameter
quantifiable attribute of an environmental aspect

EXAMPLE Environmental parameters include the type and quantity of materials used (weight, volume), power consumption, emissions, rate of recyclability, etc.

289 **3.16**
290 **extended product**



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292 **Figure 2 — Illustration of the Extended Product with embedded Motor System**

293 An extended product is the combination of a motor system and a driven equipment

294 [SOURCE: EN 50XXX-1]

295 **3.17**
296 **functional unit**
297 quantified performance of a product system for use as a reference unit

298 Note 1 to entry: For example one product

299 [SOURCE: EN ISO 14040:2006]

300 **3.18**
301 **hazardous substances and preparations**
302 substance or preparation that can adversely impact the environment with immediate or retarded effect

303 [SOURCE: IEC Guide 109:2003, modified]

304 **3.19**
305 **homogenous product family**
306 subgroup of a product family (3.34) – where the environmental aspects can reasonably be expected to
307 be similar and therefore scalable over the product family through a function of certain parameter, e.g.
308 power or weight

309 **3.20**
310 **LCA report**
311 Accompanying document to the life cycle assessment as a basis to the environmental declaration
312 giving further detailed information about the inputs, outputs, used LCI-data and the made assumptions
313 in regards to this standard

314 Note 1 to entry: This LCA report is not meant for external communication but has to be kept for justification proposes in terms of
315 environmental declaration verification or market surveillance

316 **3.21**
317 **life cycle**
318 consecutive and interlinked stages of a product system, from raw material acquisition or generation
319 from natural resources to the final disposal

320 [SOURCE: EN ISO 14040:2006]