Irish Standard
I.S. EN 50598-3:2015

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

I.S. EN 50598-3:2015

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English Version

Ecodesign for power drive systems, motor starters, power electronics and 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 Ökobilanz einschließlich Produktkategorieregeln und des Inhaltes von Umweltdeklarationen

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This European Standard exists 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.

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European Committee for Electrotechnical Standardization
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Europäisches Komitee für Elektrotechnische Normung

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Foreword

This document (EN 50598-3:2015) has been prepared by CLC/TC 22X “Power electronics”.

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) 2016-01-05
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2018-01-05

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

CLC/TC 22X/WG 6 as the standardization Task Force dealing with Mandate M/476 from the European Commission for standardization in the field of variable speed drives and/or power drive system products has been setting a close collaboration with several other technical committees (i.e. CLC/TC 2; CLC/TC 17B) in order to provide a comprehensive standard for energy efficiency and ecodesign requirements.

Key points:

— requirements on how to implement an environmentally conscious design process;

— requirements for environmental declarations, including product category rules for the underlying life cycle assessment of PDS;

— requirements on how to use environmental declarations in the extended product approach.

Within CLC/TC 22X/WG 6 a Task Force (TF2) has been set up for dealing with the environmental aspects of ecodesign through harmonized methods of assessing a product’s environmental performance and providing an environmental declaration for components of a motor system.

Since currently no horizontal approach on environmental declarations and no underlying life cycle assessment, within the standard basic and motor system specific product category rules, as required by EN ISO 14025, have been defined. If the approach is standardized for electronic and electro technical equipment through a harmonized standard (e.g. by CLC/TC 111X), the basic category rules (Clause 7) will become obsolete; however, this standard to be issued applies instead. Furthermore, product specific requirements, e.g. defined in Annex C, still need to be followed.

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

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

Introduction

Technical Committee CLC/TC 22X has circulated on 2010-03-31 for a short period of time the CLC/TC22X/Sec0100/DC document including Mandate M/476 from the 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 labelling for the whole PDS are also included. This covers the requirements coming from Mandate M/470.

The horizontal ecodesign 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.

CLC/TC 22X Working Group 6 as the standardization Task Force dealing with this Mandate has anticipated that a close collaboration with several other technical committees (i.e. CLC/TC 2; CLC/TC 17B) should be set.

Therefore CLC/TC 22X Committee has taken its responsibility for this field and has started a standardization work to clarify all aspects in the field of energy efficiency and ecodesign 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.

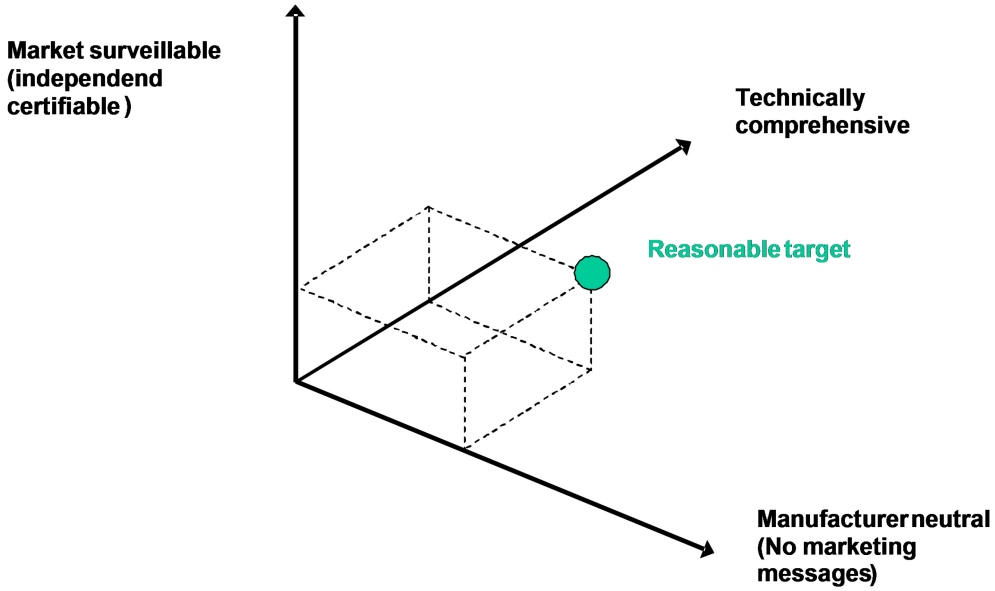

Figure 1 — Illustration of controversial requirements for the Energy related product (ErP) Standardization

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*" consists 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 ecodesign 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 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) are treated for efficiency classes like a power drive system (converter plus motor). See EN 60034–30–1 for classification of the losses of a geared motor. The efficiency classes of gearboxes as individual components are under consideration.

1 Scope

This part of EN 50598 specifies the process and requirements to implement environmentally conscious product design principles, to evaluate ecodesign performance and to communicate potential environmental impacts for power electronics (e.g. complete drive modules, CDM), power drive systems and motor starters, all used for motor driven equipment in the power range of 0,12 kW up to 1 000 kW and low voltage (up to 1 000 V) applications over the whole life cycle.

It defines the content for 2 different environmental declarations based on EN ISO 14021:

— The basic version - which, in this context, will be referred to as an environmental declaration type II, with basic data and qualitative statements on ecodesign.

— The full version - which, in this context, will be referred to as an environmental declaration type II+, based upon a life cycle assessment and including quantitatively evaluated potential environmental impacts. For that the general principles of EN ISO 14025 are taken into account and product category rules [PCR] for motor system components are included to ensure a harmonized approach.

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

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.

NOTE As it is intended by the working group to process this document, once finalized, as an IEC Standard, some normative references are given even in case if no European harmonized document exists.

EN 50598-1, *Ecodesign for power drive systems, motor starters, power electronics & their driven applications - Part 1: General requirements for setting energy efficiency standards for power driven equipment using the extended product approach (EPA), and semi analytic model (SAM)*

EN 50598-2, *Ecodesign for power drive systems, motor starters, power electronics & their driven applications - Part 2: Energy efficiency indicators for power drive systems and motor starters*

EN ISO 14020, *Environmental labels and declarations — General principles (ISO 14020)*

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

EN ISO 14025, *Environmental labels and declarations — Type III environmental declarations - Principles and procedures (ISO 14025)*

EN ISO 14040, *Environmental management — Life cycle assessment — Principles and framework (ISO 14040)*

EN ISO 14044, *Environmental management — Life cycle assessment — Requirements and guidelines (ISO 14044)*

IEC 60050-161, *International Electrotechnical Vocabulary (IEV) — Chapter 161: Electromagnetic compatibility*