



NSAI
Standards

Irish Standard
S.R. CEN/TS 16524:2013

Mechanical products - Methodology for reduction of environmental impacts in product design and development

S.R. CEN/TS 16524:2013

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWIFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces:

This document is based on:
CEN/TS 16524:2013

Published:
19 September, 2013

This document was published
under the authority of the NSAI
and comes into effect on:
19 September, 2013

ICS number:
13.020.30

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

ICS 13.020.30

English Version

Mechanical products - Methodology for reduction of environmental impacts in product design and development

Produits mécaniques - Méthodologie de réduction des impacts environnementaux à la conception et au développement des produits

Mechanische Produkte - Methodik zur Verminderung der Umweltauswirkungen bei Produktgestaltung und Entwicklung

This Technical Specification (CEN/TS) was approved by CEN on 8 June 2013 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

| | |
|--|----|
| Foreword..... | 3 |
| Introduction | 4 |
| 1 Scope..... | 6 |
| 2 Terms and definitions | 6 |
| 3 Abbreviated terms..... | 8 |
| 4 Requirements | 9 |
| 4.1 Application of the methodology | 9 |
| 4.2 Description of the methodology..... | 9 |
| 4.2.1 General | 9 |
| 4.2.2 Step 1: determination of the scoring of the environmental aspects of the reference product..... | 12 |
| 4.2.3 Step 2: selection/ranking of design options | 16 |
| 4.2.4 Step 3: choice of suitable DO and EA indicators related to the reference product | 17 |
| 4.2.5 Step 4: evaluation of the redesign using DO and EA indicators..... | 18 |
| 4.2.6 Step 5: final assessment and consideration for future activities..... | 19 |
| 5 Environmental claim | 20 |
| Annex A (normative) Environmental Questionnaire..... | 21 |
| Annex B (normative) Analysis algorithm | 28 |
| Annex C (informative) Examples of design options for environmental improvement of the product, and associated DO indicators and EA indicators | 33 |
| Annex D (informative) Example of implementation of the methodology | 39 |
| D.1 General | 39 |
| D.2 Step 1..... | 39 |
| D.2.1 Description of the reference product and the project perimeter..... | 39 |
| D.2.2 Bill of Materials..... | 39 |
| D.2.3 Environmental questionnaire | 42 |
| D.2.4 Analysis algorithm | 48 |
| D.3 Steps 2 and 3..... | 54 |
| Annex E (informative) Background of the algorithm | 57 |
| E.1 Construction of the algorithm | 57 |
| E.1.1 Overview..... | 57 |
| E.1.2 Rules for environmental analysis..... | 57 |
| E.1.3 Consideration of legislation..... | 66 |
| E.2 Validation of the algorithm | 66 |
| Bibliography..... | 67 |

Foreword

This document (CEN/TS 16524:2013) has been prepared by Technical Committee CEN/TC 406 “Project Committee - Mechanical products - Ecodesign methodology”, the secretariat of which is held by AFNOR.

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

Eco-design methodologies can be divided into three types, depending on whether their purpose is the environmental assessment of products, the environmental improvement of products or to enable the two phases to be carried out during the same eco-design project.

The environmental assessment phase of products in the eco-design process can be an impediment for enterprises (owing to need for expertise, time and resources). Therefore, the methodology discussed in this document has been developed with the aim of helping designers to identify ways of improving the environmental performance of a product without carrying out a complete environmental assessment of the product (in terms of LCA).

The approach therefore consists of restricting the scope of analysis to the area defined by the constraints of the product-enterprise pair, which takes into account the technical factors of the product, economic constraints, the practices of an enterprise and its development strategies. Secondly, it consists of exploring the potential for environmental improvement within this restricted field.

This Technical Specification is intended to give enterprises, in particular SMEs, a pragmatic methodology to consider environmental aspects during their product design. It allows them to:

- identify the environmental aspects of a product, including but not limited to energy aspects;
- be able to make progress in product design (for environmental impact reduction), taking into account capabilities of the enterprise;
- promote to clients and public authorities the environmental improvement approach on a mechanical product with this methodology (environmental claim).

The improvement of the environmental impact implies that the intended performance of the product (fitness for use, durability, etc.) is maintained.

To implement this methodology, it is necessary that the enterprise staff have knowledge and expertise in environmental issues; if not, external expertise should be available. When applying this methodology, management of the enterprise may enter a learning process with the aim of defining and/or confirming its strategy for eco-design, modifying its design process to enable the environmental issue to be taken into account, and creating new knowledge.

The aim of this Technical Specification is not to measure the actual environmental performance of a product, nor to conduct a full life cycle assessment according to ISO 14040.

Figure 1 shows the relationship between this document and existing documents from ISO.

| Objective of the approach | Generic ISO documents | Documents for mechanical products |
|---|-------------------------------------|--|
| To improve <i>Implement actions which contribute to improve the environmental performance of the product</i> | ISO/TR 14062 | <div style="border: 2px dashed red; padding: 5px; text-align: center;"> CEN/TS 16524 </div> |
| To communicate <i>advertise, label, declare an eco-design approach or an environmental performance of a product according to a common reference</i> | ISO 14020 ISO 14021 ISO 14025 | |
| To assess <i>measure the environmental performance of a product and identify the environmental aspects</i> | ISO 14040 ISO 14044 | |

NOTE More specific methodologies might exist for specific mechanical products.

Figure 1 - Relationship between this document and existing documents from ISO

This Technical Specification can assist the enterprise to comply with the requirement of EN ISO 14001 and the recommendations of EN ISO 14006, to establish, implement and maintain a procedure to identify the environmental aspects of its products.

This Technical Specification is not intended to support any specific product implementing measures of Directive 2009/125/EC (Energy related Products). It may provide methodologies for identifying the more relevant environmental aspects in order to propose alternative design options to improve the environmental performance of the product.

This document is not intended for calculation of environmental footprint.

1 Scope

This Technical Specification describes a methodology for reducing the overall environmental impact through product design and development that is tailored to mechanical products as defined in 2.1.

This methodology is particularly well suited to the redesign of an existing product; it can also be applied for the design of a new product provided the necessary assumptions regarding a (virtual) reference product are taken.

It addresses enterprises which have decided to integrate an eco-design approach to optimise environmental impacts within the product life cycle, in relation to the other product aspects, such as functionality, quality, costs, etc.

NOTE 1 This document targets persons who are directly involved in the design and development of mechanical products, as well as managers responsible for defining corporate policies, and decision-makers. The proposed methodology is intended to kick-start eco-design initiatives within companies as part of a teaching and continuous improvement approach.

This document also includes a template that enterprises may use as part of the communication on their environmental approach.

This document is neither intended nor suitable to compare products (even similar) of other suppliers.

This document is neither intended nor suitable for certification purposes.

NOTE 2 An example of implementation of the methodology is given in Annex D; the basic principles for the establishment of this method are given in Annex E.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

mechanical product

product manufactured by enterprises from mechanical engineering and metalworking industry, such as capital goods (machinery, production systems, components), tools, household goods, optical parts, measuring instruments

2.2

reference product

existing product of the company to be re-designed, with the same intended use

Note 1 to entry: It can be also a similar product existing on the market, or the Technical Specification of a product.

2.3

environmental aspect

EA

element of an organisation's activities, products or services that can interact with the environment

Note 1 to entry: For this document, environmental aspects are categorised into Raw Materials acquisition, Manufacturing, Use, Product End-of-life, Hazardous substances, Transport and distribution, Packaging.

[SOURCE: ISO 14001:2004, 3.6, modified – Note 1 to entry has been adapted]

2.4

(environmental) design option

DO

measure intended to improve a specific environmental aspect within the product life cycle, in relation to the other product aspects, such as functionality, quality, costs, etc

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- Looking for additional Standards? Visit Intertek Inform Infostore
 - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-