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Miljöledning – Ekoeffektivitetsbedömning av produktsystem – Principer, krav och vägledning (ISO 14045:2012)

Environmental management – Eco-efficiency assessment of product systems – Principles, requirements and guidelines (ISO 14045:2012)

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The European Standard EN ISO 14045:2012 has the status of a Swedish Standard. This document contains the official version of EN ISO 14045:2012.

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Denna standard är framtagen av kommittén för Livscykelanalys, Miljömärkning och Miljödeklarationer, SIS/TK 307.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 14045

May 2012

ICS 13.020.10; 13.020.60

English Version

Environmental management - Eco-efficiency assessment of product systems - Principles, requirements and guidelines (ISO 14045:2012)

Management environnemental - Évaluation de l'éco-efficacité des systèmes de produits - Principes, exigences et lignes directrices (ISO 14045:2012)

Umweltmanagement - Ökoeffizienzbewertung von Produktsystemen - Prinzipien, Anforderungen und Leitlinien (ISO 14045:2012)

This European Standard was approved by CEN on 3 May 2012.

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Foreword

This document (EN ISO 14045:2012) has been prepared by Technical Committee ISO/TC 207 “Environmental management”.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 2012, and conflicting national standards shall be withdrawn at the latest by November 2012.

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Endorsement notice

The text of ISO 14045:2012 has been approved by CEN as a EN ISO 14045:2012 without any modification.

Introduction

Eco-efficiency assessment is a quantitative management tool which enables the study of life-cycle environmental impacts of a product system along with its product system value for a stakeholder.

Within eco-efficiency assessment, environmental impacts are evaluated using Life Cycle Assessment (LCA) as prescribed by other International Standards (ISO 14040, ISO 14044). Consequently, eco-efficiency assessment shares with LCA many important principles such as life cycle perspective, comprehensiveness, functional unit approach, iterative nature, transparency and priority of a scientific approach.

The value of the product system may be chosen to reflect, for example, its resource, production, delivery or use efficiency, or a combination of these. The value may be expressed in monetary terms or other value aspects.

The key objectives of this International Standard are to:

— establish clear terminology and a common methodological framework for eco-efficiency assessment;

— enable the practical use of eco-efficiency assessment for a wide range of product (including service) systems;

— provide clear guidance on the interpretation of eco-efficiency assessment results;

— encourage the transparent, accurate and informative reporting of eco-efficiency assessment results.

Environmental management — Eco-efficiency assessment of product systems — Principles, requirements and guidelines

1 Scope

This International Standard describes the principles, requirements and guidelines for eco-efficiency assessment for product systems, including:

a) the goal and scope definition of the eco-efficiency assessment;

b) the environmental assessment;

c) the product system value assessment;

d) the quantification of eco-efficiency;

e) interpretation (including quality assurance);

f) reporting;

g) critical review of the eco-efficiency assessment.

Requirements, recommendations and guidelines for specific choices of categories of environmental impact and values are not included. The intended application of the eco-efficiency assessment is considered during the goal and scope definition phase, but the actual use of the results is outside the scope of this International Standard.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 14040:2006, *Environmental management — Life cycle assessment — Principles and framework*

ISO 14044:2006, *Environmental management — Life cycle assessment — Requirements and guidelines*

ISO 14050:2009, *Environmental management — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14050 and the following apply.

3.1
product
any goods or service

[SOURCE: ISO 14021:1999, 3.1.11]

3.2
product flow
products (3.1) entering from or leaving to another product system

[SOURCE: ISO 14040:2006, 3.27]

3.3
product system
collection of unit processes with elementary and *product flows* (3.2), performing one or more defined functions, and which models the life cycle of a *product* (3.1)

[SOURCE: ISO 14040:2006, 3.28]

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

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

[SOURCE: ISO 14001:2004, 3.6]

3.5
environmental performance
measurable results related to *environmental aspects* (3.4)

3.6
eco-efficiency
aspect of sustainability relating the *environmental performance* (3.5) of a *product system* (3.3) to its *product system value* (3.7)

3.7
product system value
worth or desirability ascribed to a *product system* (3.3)

Note 1 to entry: The product system value may encompass different value aspects, including functional, monetary, aesthetic, etc.

3.8
product system value indicator
numerical quantity representing the *product system value* (3.7)

Note 1 to entry: To express the product system value indicator, various kinds of units such as physical and monetary units or relative gradings and scoring may be used.

3.9
eco-efficiency indicator
measure relating *environmental performance* (3.5) of a *product system* (3.3) to its *product system value* (3.7)

3.10
eco-efficiency profile
eco-efficiency (3.6) assessment results relating the life cycle impact assessment results to the *product system value* (3.7) assessment results

3.11
weighting factor
<eco-efficiency> factor derived from a weighting model, which is applied to convert an assigned life cycle inventory result, a life cycle impact category indicator result, or a product system value indicator to the common unit of the weighting indicator

3.12
sensitivity analysis
systematic procedures for estimating the effects of the choices made regarding methods and data on the outcome of a study

[SOURCE: ISO 14040:2006, 3.31]

3.13
uncertainty analysis
systematic procedure to quantify the uncertainty in the results of a life cycle inventory analysis and/or product system value assessment due to the cumulative effects of model imprecision, input uncertainty and data variability

Note 1 to entry: Either ranges or probability distributions are used to determine uncertainty in the results.

[SOURCE: ISO 14040:2006, 3.33, modified — “and/or product system value assessment” has been inserted.]

3.14
unit process
smallest element considered in the life cycle inventory analysis or product system value assessment for which input and output data are quantified

[SOURCE: ISO 14040:2006, 3.34, modified — “or product system value assessment” has been inserted.]

3.15
critical review
<eco-efficiency> process intended to ensure consistency between an *eco-efficiency* (3.6) assessment and the principles and requirements of the International Standards on eco-efficiency assessment

[SOURCE: ISO 14040:2006, 3.45, modified — “Life cycle assessment” has been replaced by “eco-efficiency assessment”.]

3.16
comparative eco-efficiency assertion
claim in *eco-efficiency* (3.6) regarding the superiority or equivalence of one *product* (3.1) versus a competitor’s *product* that performs the same function

Note 1 to entry: This definition does not interpret, change, or subtract from the requirements of ISO 14044 on comparative assertions.

4 General description of eco-efficiency

4.1 Principles of eco-efficiency

4.1.1 General

The following principles are fundamental and serve as guidance for decisions relating to both the planning and the conducting of an eco-efficiency assessment.

4.1.2 Life cycle perspective

An eco-efficiency assessment considers the entire life cycle from raw material extraction and acquisition, through energy and material production and manufacturing, to use and end-of-life treatment and final disposal. Through such a systematic overview and perspective, the shifting of a potential impact between life cycle stages or individual processes can be identified and assessed with a view to an overall eco-efficiency.

4.1.3 Iterative approach

Eco-efficiency assessment is an iterative technique. The individual phases of an eco-efficiency assessment (see Figure 1) use results of the other phases. The iterative approach within and between the phases contributes to the comprehensiveness and consistency of the eco-efficiency assessment and the reported results.

4.1.4 Transparency

Due to the inherent complexity in eco-efficiency assessment, transparency is an important guiding principle in executing an eco-efficiency assessment, in order to ensure a proper interpretation of the results.