INTERNATIONAL STANDARD

ISO 14006

First edition
2011-07-15

Environmental management systems — Guidelines for incorporating ecodesign

Systèmes de management environnemental — Lignes directrices pour incorporer l'écoconception

Reference number
ISO 14006:2011(E)

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Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 14006 was prepared by Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 1, *Environmental management systems*.

Introduction

International concern over damage to the environment (e.g. in the form of climate change, depletion of resources, and air, water and soil environmental pollution) is encouraging organizations to pay more attention to managing the environmental impacts of their activities and products and to focus on continuously improving their environmental performance. In order to reduce detrimental effects on the environment, more and more organizations are recognizing the need to include environmental performance in the design of their products.

NOTE In this International Standard, the term "product" is understood to cover both goods and services.

The fact that legislation relating to the environmental impact of products is being implemented at an ever increasing rate worldwide is also encouraging many organizations to improve the environmental performance of their products. Such organizations need guidance on how to apply their efforts in a systematic manner, in order to achieve environmental objectives and to maintain continual improvement in the environmental performance of their products as well as their processes.

Ecodesign can be understood as a process integrated within the design and development that aims to reduce environmental impacts and continually to improve the environmental performance of the products, throughout their life cycle from raw material extraction to end of life. In order to be of benefit to the organization and to ensure that the organization achieves its environmental objectives, it is intended that ecodesign be carried out as an integral part of the business operations of the organization. Ecodesign might have implications for all functions of an organization.

In order to carry out ecodesign in a systematic and manageable way, it is intended that organizations implement an appropriate process and then have, or have access to, the necessary competence to carry out and manage this process. This needs the support of top management (see 4.2).

An ecodesign process takes place within an organization's design and development area, and it is here that the knowledge required in carrying out and managing ecodesign is to be found. However, when it is intended that ecodesign be carried out under the umbrella of an environmental management system (EMS), then the person responsible for the EMS needs to have an understanding of what this process is and how it is going to be managed and controlled. In this way, the integrity of the EMS is not jeopardized and the environmental objectives for the products can be achieved.

The general areas of knowledge required to incorporate ecodesign within an EMS are the following:

a) assessment of the impact of the products on the environment;

b) identification of appropriate ecodesign measures to reduce the adverse effects of environmental impacts;

c) the design and development process and an understanding of how an ecodesign process and its management fit within an EMS.

The first two of these areas are likely to be situated within the design and development area, but the third is clearly of major significance to the person responsible for the EMS. This International Standard primarily provides guidance on this third area.

This International Standard is the first to cover and interrelate all three knowledge areas required for ecodesign within an EMS.

ISO 14001 links management of an organization's processes with environmental impacts, but does not include design management processes. ISO 9001 covers the design management process, but does not explicitly cover environmental impacts. ISO/TR 14062 and IEC 62430 assist incorporation of the evaluation of environmental aspects and impacts into the design and development process, but as such, they do not fully

explain the activities involved within an environmental and business management framework, such as those described in ISO 14001.

Figure 1 illustrates the relationship between the aforementioned International Standards, their scope of knowledge and their relationship with this International Standard, which links all three areas and related documents.

This International Standard incorporates the necessary information from the other International Standards, such that the appropriate processes and procedures can be put into place to implement structured and managed ecodesign under the umbrella of an EMS. By using this International Standard, organizations can build on their existing management processes and competencies without necessarily having to implement or use all of the related International Standards.

When applying this International Standard, it is intended that an organization always uses its existing processes and procedures as a starting point, and that it uses the guidelines in this International Standard in a flexible and practical manner.

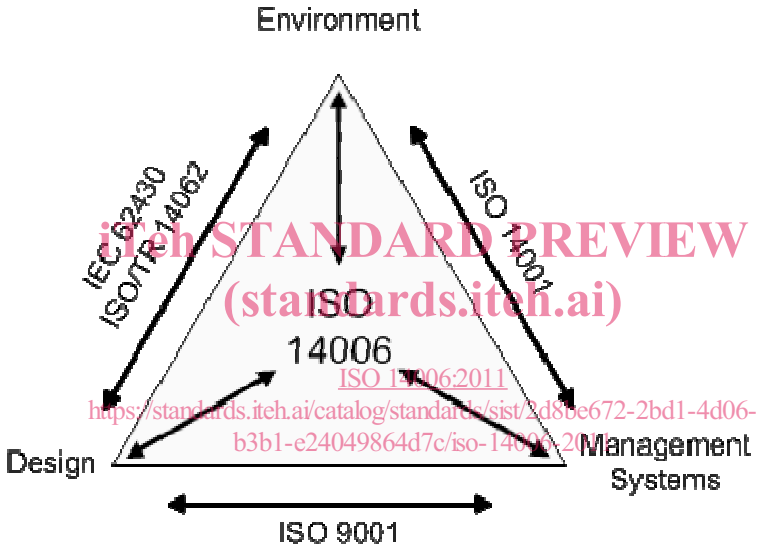

Figure 1 — Relationship between ISO 14001, ISO 9001, ISO/TR 14062, IEC 62430 and ISO 14006 and the functional areas of knowledge

This International Standard provides guidelines to assist organizations in establishing a systematic and structured approach to the incorporation and implementation of an ecodesign process within an EMS such as that described in ISO 14001. The guidelines are intended to be applicable to all organizations, regardless of type, size and product provided.

This International Standard contains three principal clauses that provide guidance to the person responsible for the EMS.

— Clause 4 addresses the role of top managers. It explains the potential benefits of ecodesign and discusses the strategic issues of relevance to business and management.

— Clause 5 shows how an ecodesign process can be incorporated into and managed under an EMS. It provides guidelines for addressing ecodesign as part of an EMS in line with the structure of ISO 14001. The requirements of ISO 14001:2004 are given in boxes and for each subclause, specific guidance is given on how the subclause relates to an ecodesign process. The product design and development activities of an organization are the focus of 5.4.6, which incorporates the method described in ISO 9001:2008, 7.3 (the requirements of which are given in boxes), supplemented by specific guidance related to ecodesign.

— The product design and development activities of an organization are the focus of 5.4.6. Although there are different ways of carrying out a design and development process, this International Standard follows the method described in ISO 9001:2008, 7.3.

— Clause 6 explains how ecodesign is addressed in the design and development process.

Annex A supplements Clause 4 by providing more detailed information on the strategic issues and the role of top management in ecodesign.

Annex B shows how this International Standard relates to existing International Standards.

Although aimed primarily at organizations that have an EMS such as that described in ISO 14001, whether or not combined with a quality management system (QMS), this International Standard is also of value for organizations that only have a QMS. It can also be useful for other organizations without a formalized EMS or QMS but which are interested in reducing the adverse environmental impacts of their products.

Environmental management systems — Guidelines for incorporating ecodesign

1 Scope

This International Standard provides guidelines to assist organizations in establishing, documenting, implementing, maintaining and continually improving their management of ecodesign as part of an environmental management system (EMS).

This International Standard is intended to be used by those organizations that have implemented an EMS in accordance with ISO 14001, but can help in integrating ecodesign in other management systems. The guidelines are applicable to any organization regardless of its size or activity.

This International Standard applies to those product-related environmental aspects that the organization can control and those it can influence.

This International Standard does not establish by itself specific environmental performance criteria, and is not intended for certification purposes.

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 14050, *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
design and development
set of processes that transforms requirements into specified characteristics or into the specification of a product, process or system

NOTE 1 The terms “design” and “development” are sometimes used synonymously and sometimes used to define different stages of the overall process of turning an idea into a product.

NOTE 2 Product development is the process of taking a product idea from planning to market launch and review of the product, in which business strategies, marketing considerations, research methods and design aspects are used to take a product to a point of practical use. It includes improvements or modifications to existing products or processes.

NOTE 3 Adapted from ISO 14050:2009, definition 6.3.

3.2
ecodesign
integration of environmental aspects into product design and development, with the aim of reducing adverse environmental impacts throughout a product's life cycle

NOTE Other terminology used worldwide includes Environmentally Conscious Design (ECD), Design For Environment (DFE), green design and environmentally sustainable design.

3.3
product
any goods or service

NOTE 1 The product can be categorized as follows:

— services (e.g. transport);

— software (e.g. computer program, dictionary);

— hardware (e.g. engine mechanical part);

— processed materials (e.g. lubricant).

NOTE 2 Services have tangible and intangible elements. Provision of a service can involve, for example, the following:

— an activity performed on a customer-supplied tangible product (e.g. automobile to be repaired);

— an activity performed on a customer-supplied intangible product (e.g. the income statement needed to prepare a tax return);

— the delivery of an intangible product (e.g. the delivery of information in the context of knowledge transmission);

— the creation of ambience for the customer (e.g. in hotels and restaurants).

Software consists of information, is generally intangible, and can be in the form of approaches, transactions or procedures.

Hardware is generally tangible and its amount is a countable characteristic. Processed materials are generally tangible and their amount is a continuous characteristic.

[ISO 14050:2009, definition 6.2]

4 Role of top management in ecodesign

4.1 Benefits of conducting ecodesign

The goal of ecodesign is to integrate environmental aspects into product design and development so as to reduce the adverse environmental impacts of products throughout their life cycles. In striving for this goal, multiple benefits can be achieved for the organization, its customers and other interested parties. Potential benefits may include:

a) economic benefits, e.g. through increased competitiveness, cost reduction and attraction of financing and investments;

b) promotion of innovation and creativity, and identification of new business models;

c) reduction in liability through reduced environmental impacts and improved product knowledge;

d) improved public image (both for the organization image and/or brand);

e) enhancement of employee motivation.

Organizations can obtain these kinds of benefits from ecodesign, irrespective of their size, their geographical location, their culture and the complexity of their management systems. Due to this diversity, their style of operation may vary substantially, but will not affect the benefits that can potentially be obtained. Not all these

benefits will necessarily be realized simultaneously or in a short time scale, due to, for example, financial and technological limitations.

4.2 Tasks for ecodesign

This subclause explains the tasks for top management in setting the strategic direction of the organization in relation to ecodesign, as well as in managing ecodesign implementation. Both the strategy and management activities are considered here on a general organization level. In Clause 5, strategy and management are considered from a specific EMS perspective, whereas in Clause 6 these are seen from a specific product design perspective.

Top management has two types of tasks to ensure that ecodesign is properly embedded in an organization.

a) The first task concerns the strategic aspects of ecodesign, in particular with reference to:

   1) strategic product planning and integration of ecodesign into all operations of the organization,

   2) allocating resources (human, technical and financial) for the planning, implementation and improvement of ecodesign,

   3) changes in external market conditions and opportunities arising from technological developments, improvements in the product system and supply chain management,

   4) setting objectives for environmental performance,

   5) promoting innovation and development of new business models, and

   6) contributing to value creation.

   Previous management reviews can contribute substantially towards this task.

b) The second task is management of the internal processes once the ecodesign strategy and the ecodesign focus has been set. This includes

   1) integration and implementation of the chosen ecodesign strategy in all relevant procedures, programmes and roadmaps,

   2) ensuring a cross-functional approach,

   3) involving the total value chain in the chosen design strategy, both upstream (suppliers) and downstream (after sales, service providers, recyclers), and

   4) fostering two-way communication, both in the internal and external value chain.

   In order to make sure that these processes develop in an optimum way, the setting up of a process performance measurement system can be of great help.

For further information about the role of top management in ecodesign, see Annex A.

5 Guidelines for incorporating ecodesign into an EMS

5.1 General guidelines

This clause provides guidelines for addressing ecodesign as part of an EMS such as that described in ISO 14001. In 5.2 to 5.6, the requirements of ISO 14001:2004 are reproduced in boxes, and for each subclause, specific guidance is given on issues to consider when addressing environmental aspects of a product throughout its life cycle.

The process of product design and development is the focus of 5.4.6. Although there are different ways of carrying out a design and development process, this International Standard follows the method described in ISO 9001:2008, 7.3, the requirements of which are reproduced in boxes, supplemented by specific guidance related to ecodesign.

ISO 14001:2004, Environmental management systems — Requirements with guidance for use

4.1 General requirements

The organization shall establish, document, implement, maintain and continually improve an environmental management system in accordance with the requirements of this International Standard and determine how it will fulfil these requirements.

The organization shall define and document the scope of its environmental management system.

When establishing the scope of the EMS, an organization should pay specific attention to its design and development processes and the environmental aspects of its products. It is essential to include the design and development of a product within the scope of the EMS, since it has major influence on the environmental impacts of products.

5.2 Environmental policy

ISO 14001:2004, Environmental management systems — Requirements with guidance for use

4.2 Environmental policy

Top management shall define the organization's environmental policy and ensure that, within the defined scope of its environmental management system, it

a) is appropriate to the nature, scale and environmental impacts of its activities, products and services,

b) includes a commitment to continual improvement and prevention of pollution,

c) includes a commitment to comply with applicable legal requirements and with other requirements to which the organization subscribes which relate to its environmental aspects,

d) provides the framework for setting and reviewing environmental objectives and targets,

e) is documented, implemented and maintained,

f) is communicated to all persons working for or on behalf of the organization, and

g) is available to the public.

To enable top management to make a commitment to and establish a framework for ecodesign, it is important that the policy

a) is in alignment with the nature, scale and significant environmental impacts of the products throughout the life cycle, and

b) includes a commitment to

— comply with applicable legal requirements and with other requirements to which the organization subscribes relating to the environmental aspects of its products,

— continual improvement of the ecodesign process, and

— continual improvement of the environmental performance of the organization's products throughout their life cycle, not shifting adverse environmental impacts from one life cycle stage to another or from one category to another, unless it results in a net reduction of negative environmental impacts throughout the product's life cycle,

c) provides the framework for setting and reviewing product-related environmental objectives and targets.

5.3 Planning

5.3.1 Environmental aspects

ISO 14001:2004, Environmental management systems — Requirements with guidance for use

4.3.1 Environmental aspects

The organization shall establish, implement and maintain a procedure(s)

a) to identify the environmental aspects of its activities, products and services within the defined scope of the environmental management system that it can control and those that it can influence taking into account planned or new developments, or new or modified activities, products and services, and

b) to determine those aspects that have or can have significant impact(s) on the environment (i.e. significant environmental aspects).

The organization shall document this information and keep it up to date.

The organization shall ensure that the significant environmental aspects are taken into account in establishing, implementing and maintaining its environmental management system.

The process of identifying and evaluating environmental aspects should explicitly include the life cycle of the organization's products to be designed, or those to be redesigned. The purpose is to determine which aspects have or could have significant impact on the environment. This generally follows the stages defined below.

a) Identification of the environmental aspects related to the life cycle of the products that can be controlled or influenced by the organization.

For each life cycle stage, the organization should identify environmental aspects, both inputs (consumption of materials, energy, water and other resources used), and outputs (waste, emissions and others) that result in environmental impacts (e.g. pollution of air, water and soil, climate change).

b) Evaluation of environmental aspects to determine their significance.

In order to determine what aspects are significant, the organization should establish a method, based mainly on environmental criteria, which should take into account as many types of environmental impacts as possible. The result of the evaluation should be reproducible and consistent.