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systems—Guidelines for
incorporating ecodesign**

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Contents

	Page
Introduction	1
1 Scope	4
2 Normative reference	4
3 Terms and definitions	4
4 Role of top management in ecodesign	6
4.1 Benefits of conducting ecodesign	6
4.2 Tasks for ecodesign	6
5 Guidelines for incorporating ecodesign into an EMS	7
5.1 General guidelines	7
5.2 Environmental policy	8
5.3 Planning	9
5.4 Implementation and operation	12
5.5 Checking	22
5.6 Management review	25
6 Ecodesign activities in product design and development	25
6.1 General	25
6.2 Life cycle thinking	26
6.3 Ecodesign process	26
6.4 Environmental assessment of products	27
6.5 Analysis of interested parties' environmental requirements	27
6.6 Ecodesign review	27
6.7 Value chain involvement	27
Annex A (informative) Top management and strategic issues on ecodesign	29
Annex B (informative) Correlation of JIS Q 14006 with other Standards on ecodesign	34
Bibliography	39

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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Environmental management systems— Guidelines for incorporating ecodesign

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of **ISO 14006** published in 2011 without any modifications of technical contents.

The portions with dotted underlines are the matters not given in the corresponding International Standard.

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 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 Standard primarily provides guidance on this third area.

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

JIS Q 14001 links management of an organization's processes with environmental impacts, but does not include design management processes. **JIS Q 9001** covers the design management process, but does not explicitly cover environmental impacts. **TR Q 0007** and **JIS C 9910** 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 **JIS Q 14001**.

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

This Standard incorporates the necessary information from the other 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 Standard, organizations can build on their existing management processes and competencies without necessarily having to implement or use all of the related Standards.

When applying this 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 Standard in a flexible and practical manner.

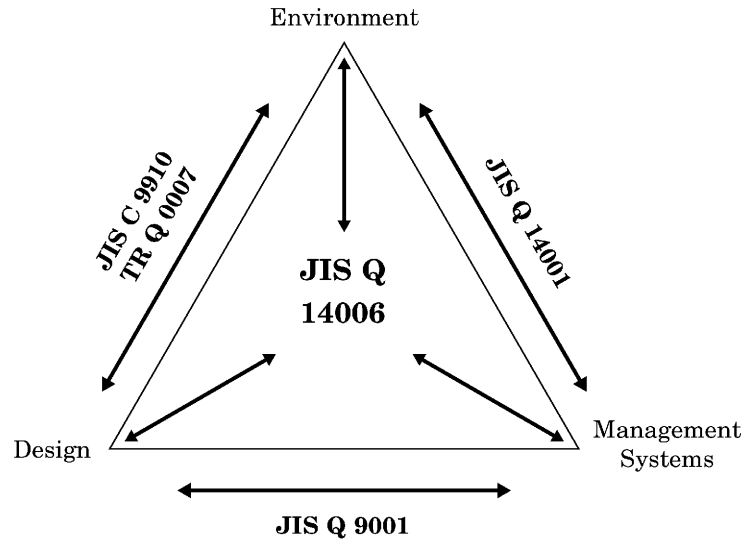


Figure 1 Relationship between JIS Q 14001, JIS Q 9001, TR Q 0007, JIS C 9910 and JIS Q 14006 and the functional areas of knowledge

This 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 **JIS Q 14001**. The guidelines are intended to be applicable to all organizations, regardless of type, size and product provided.

This 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 **JIS Q 14001**. The requirements of **JIS Q 14001** 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 **JIS Q 9001, 7.3** (the requirements of which are given in boxes), supplemented by specific guidance related to ecodesign. Although there are different ways of carrying out a design and development process, this Standard follows the method described in **JIS Q 9001, 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 Standard relates to existing Standards.

Although aimed primarily at organizations that have an EMS such as that described in **JIS Q 14001**, whether or not combined with a quality management system (QMS), this 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.

1 Scope

This 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 Standard is intended to be used by those organizations that have implemented an EMS in accordance with **JIS Q 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 Standard applies to those product-related environmental aspects that the organization can control and those it can influence.

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

NOTE : The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 14006:2011 *Environmental management systems—Guidelines for incorporating ecodesign* (IDT)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this Standard. The most recent edition of the standard (including amendments) indicated below shall be applied.

JIS Q 14050 *Environmental management—Vocabulary*

NOTE : Corresponding International Standard: ISO 14050 *Environmental management—Vocabulary* (IDT)

3 Terms and definitions

For the purposes of this Standard, the terms and definitions given in **JIS Q 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 **JIS Q 14050:2012**, 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.

[**JIS Q 14050:2012**, 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 **JIS Q 14001**. In **5.2** to **5.6**, the requirements of **JIS Q 14001** 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 Standard follows the method described in **JIS Q 9001, 7.3**, the requirements of which are reproduced in boxes, supplemented by specific guidance related to ecodesign.

JIS Q 14001:2004, Environmental management system—Retirements 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 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

JIS Q 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

JIS Q 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 re-designed. 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.

When designing or redesigning a product, the evaluation of the significance of its environmental aspects may be done on the basis of previous model of the product, a similar product on the market, or a hypothetical reference.

During the design process, the organization should take into account all relevant environmental aspects, ensuring that significant ones are considered in setting its environmental objectives.

5.3.2 Legal and other requirements

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

4.3.2 Legal and other requirements

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

- a) to identify and have access to the applicable legal requirements and other requirements to which the organization subscribes related to its environmental aspects, and
- b) to determine how these requirements apply to its environmental aspects.

The organization shall ensure that these applicable legal requirements and other requirements to which the organization subscribes are taken into account in establishing, implementing and maintaining its environmental management system.

When identifying applicable legal and other requirements, the organization should pay special attention to requirements related to the environmental aspects of its products throughout its life cycle. These requirements should be taken into account in the product design and development process (see **5.4.6.3**).

Some examples are given below:

- requirements from the interested parties related to the organization and its products (e.g. those derived from environmental product legislation, information provided by societal and investors' expectations, suppliers, non-governmental organizations, financing entities, insurance companies, and customers' needs, trends and expectations);
- future policy developments (e.g. new legislation concerning product specifications, product information to customer, packaging and labels for application in the near future, and restrictions and obligations resulting from national and international regulations);
- environmental standards related to products (e.g. national or international standards on environmental labelling and voluntary agreements);
- product requirements established by the business organizations to which the organization belongs, or originating from opportunities identified through the organization's environmental product strategy considerations.

This activity can be done after or in parallel with identification of environmental aspects.