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Energy management systems — Requirements with guidance for use

Systèmes de management de l'énergie — Exigences et lignes directrices pour utilisation

ICS 27.010

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Contents

Page

Foreword	v
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	1
4 Energy management system requirements	5
4.1 General requirements	5
4.2 Management responsibility.....	5
4.2.1 General	5
4.2.2 Roles, responsibility and authority	5
4.3 Energy policy	6
4.4 Energy Planning.....	6
4.4.1 General	6
4.4.2 Legal and other requirements.....	6
4.4.3 Energy review.....	7
4.4.4 Energy Baseline	7
4.4.5 Energy performance indicators	7
4.4.6 Objectives, targets and action plans	7
4.5 Implementation and operation	8
4.5.1 General	8
4.5.2 Competence, training and awareness	8
4.5.3 Documentation.....	8
4.5.4 Operational control.....	9
4.5.5 Communication.....	9
4.5.6 Design.....	10
4.5.7 Procurement of energy services, products, equipment and energy.....	10
4.6 Checking performance	10
4.6.1 Monitoring, measurement and analysis	10
4.6.2 Evaluation of legal/other compliance	11
4.6.3 Internal audit of the Energy Management System	11
4.6.4 Nonconformities, correction, corrective, and preventive action.....	11
4.6.5 Control of records.....	12
4.7 Management Review.....	12
4.7.1 Input to management review.....	12
4.7.2 Output from management review	12
Annex A (informative) Guidance on the use of Clause 4 Energy management system requirements	13
A.1 General requirements	13
A.2 Management responsibility.....	13
A.2.1 General	13
A.2.2 Roles, responsibility and authority	14
A.3 Energy Policy	14
A.4 Energy Planning.....	14
A.4.1 General	14
A.4.2 Legal and other requirements.....	15
A.4.3 Energy Review	15
A.4.4 Energy Baseline	15
A.4.5 Energy performance indicators	15
A.5 Implementation and operation	15

A.5.1	Competence, training and awareness	15
A.5.2	Documentation	15
A.5.3	Operational control	16
A.5.4	Design	16
A.5.5	Procurement of energy services, products and energy	16
A.6	Checking performance	17
A.6.1	Monitoring, measurement and analysis	17
A.6.2	Evaluation of legal/other compliance	17

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 50001 was prepared by Project Committee ISO/PC 242, *Energy management*.

Introduction

The purpose of this International Standard is to enable organizations to establish the systems and processes necessary to improve energy performance, including energy efficiency, use, consumption and intensity. Implementation of this standard should lead to reductions in energy cost, greenhouse gas emissions and other environmental impacts, through systematic management of energy. It is applicable to all types and sizes of organizations irrespective of geographical, cultural or social conditions. Successful implementation depends on commitment from all levels and functions of the organization, and especially from top management.

This International Standard specifies requirements of an energy management system (EnMS) for an organization to develop and implement an energy policy, establish objectives, targets, and action plans, which take into account legal requirements and information pertaining to significant energy use. An energy management system enables an organization to achieve its policy commitments, take action as needed to improve its energy performance and demonstrate the conformity of the system to the requirements of this International Standard. Application of this International Standard can be tailored to fit the requirements of an organization - including the complexity of the system, degree of documentation, and resources - and applies to the activities under the control of the organization.

This International Standard is based on the Plan-Do-Check-Act continual improvement framework and incorporates energy management into everyday organizational practices.

NOTE This approach can be briefly described as follows.

- Plan: establish the objectives and processes necessary to deliver results in accordance with opportunities to improve energy performance and the organization's policies.
- Do: implement the processes.
- Check: monitor and measure processes and product against policies, objectives and the key characteristics of its operations and report the results.
- Act: take actions to continually improve energy performance.

The basis of this approach is shown in Figure 1.

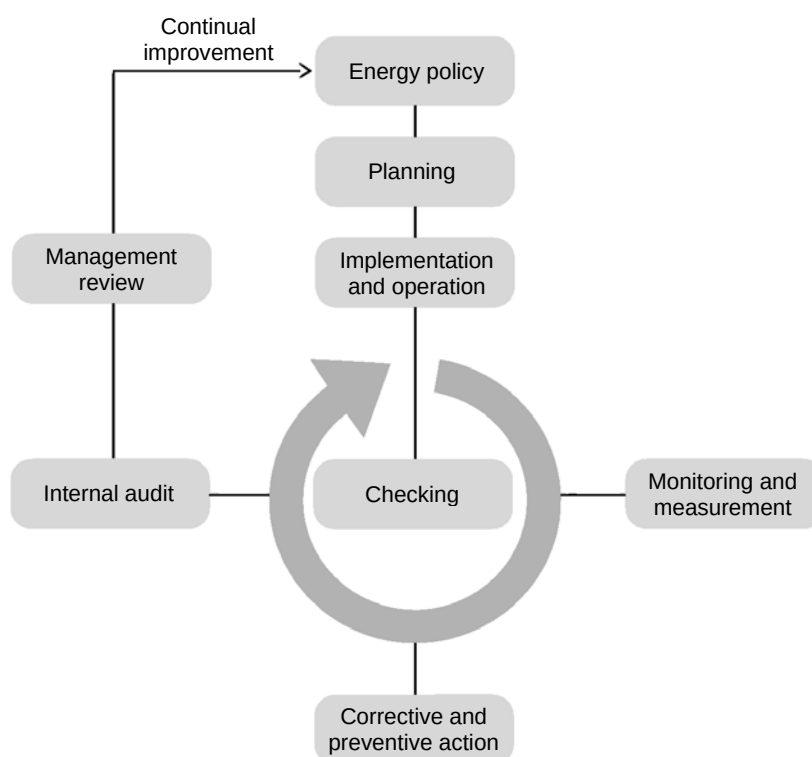


Figure 1 — Energy Management System Model for this International Standard

Global application of this International Standard contributes to more efficient use of available energy sources, enhanced competitiveness, and a positive impact on climate change. This International Standard considers all types of energy.

NOTE 1 Energy includes renewable, non-renewable and recovered energy.

This International Standard can be used for certification, registration and self-declaration of an organization's energy management system. It does not establish absolute requirements for energy performance beyond the commitments in the energy policy of the organization and its obligation to comply with applicable legal and other requirements. Thus, two organizations carrying out similar operations, but having different energy performance, can both conform to its requirements.

The organization can choose to integrate ISO 50001 with those of other management systems such as quality, environment, occupational health and safety or social responsibility, or other.

Energy management systems — Requirements with guidance for use

1 Scope

This International Standard specifies requirements for an organization to establish, implement, maintain and improve an energy management system, which enables that organization to take a systematic approach, in order to achieve continual improvement of energy performance, energy efficiency and energy conservation. This International Standard specifies requirements applicable to energy supply and energy uses and consumption, including measurement, documentation and reporting, design and procurement practices for energy using equipment, systems, processes, and personnel. This international Standard applies to all factors affecting energy use, which can be monitored and influenced by the organization. This international standard does not prescribe specific performance criteria with respect to energy.

This International Standard for energy management systems has been designed to be used independently, but it can be aligned or integrated with other management systems. It is applicable to all organizations.

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.

None at this time.

3 Terms and definitions

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

3.1

boundaries

physical or site limits and/or organizational limits as defined by the organization

NOTE Examples include a process, a group of processes, a plant, an entire organization or multiple sites under the control of an organization.

3.2

continual improvement

recurring process which results in enhancement of energy performance and the energy management system

NOTE 1 The process of establishing objectives and finding opportunities for improvement is a continual process.

NOTE 2 Continual improvement can achieve improvements in overall energy performance, consistent with the organization's energy policy.

3.3

correction

action to eliminate a detected nonconformity (3.13)

NOTE Adapted from ISO 9000:2005.

3.4

corrective action

action to eliminate the cause of a detected nonconformity

NOTE 1 There can be more than one cause for a nonconformity.

NOTE 2 Corrective action is taken to prevent recurrence whereas preventive action is taken to prevent occurrence.

3.5

energy

electricity, fuels, steam, heat, compressed air, renewables and other like media

NOTE 1 For the purpose of this standard, energy refers to the various forms of primary or secondary energy which can be purchased, stored, treated or used in equipment or in a process, or recovered

NOTE 2 The capacity of a system to produce external activity or perform work.

3.6

energy baseline

quantitative reference providing a basis for comparison of energy performance

NOTE 1 An energy baseline can reflect a point in time or a period of time.

NOTE 2 An energy baseline can be normalized by adjustment factors [relevant variable affecting energy use and/or consumption] such as production level, degree days (outdoor temperature), etc.

3.7

energy consumption

quantity of energy applied

3.8

energy efficiency

ratio or other quantitative relationship between an output of performance, service, goods or energy, and an input of energy

NOTE 1 Examples are conversion efficiency, energy required/energy used, output/input, theoretical energy used to operate/energy used to operate.

NOTE 2 Both input and output have to be clearly specified in quantity and quality, and be measurable.

3.9

energy management system

EnMS

set of interrelated or interacting elements to establish an energy policy and energy objectives, and processes and procedures to achieve those objectives

3.10

energy objective

specified outcome or achievement set to meet the organization's energy policy related to improved energy performance

3.11

energy performance

measurable results related to energy use and energy consumption

NOTE 1 In the context of energy management systems, results can be measured against the organization's energy policy, objectives, targets and other energy performance requirements

NOTE 2 Energy performance is one component of the performance of the energy management system

**3.12
energy performance indicator**

EnPI

quantitative value or measure of energy performance as defined by the organization

**3.13
energy policy**

overall intentions and direction of an organization related to its energy performance as formally expressed by top management

NOTE The energy policy provides a framework for action and for the setting of energy objectives and energy targets.

**3.14
energy review**

determination of the status of the organization's energy performance based on data and other information leading to identification of opportunities for improvement

**3.15
energy services**

activities and their results related to the provision and/or use of energy

NOTE In other regional or national standards, concepts such as identification and review of energy aspects or energy profile are included in the concept of energy review.

**3.16
energy target**

detailed energy performance requirement, quantifiable, applicable to the organization or parts thereof, that arises from the energy objective and that needs to be set and met in order to achieve this objective

**3.17
energy use**

manner or kind of application of energy

NOTE 1 Examples are ventilation, lighting, heating, cooling, transportation, processes, production lines.

**3.18
interested parties**

person or group concerned with or affected by the energy performance of the organization

**3.19
management system audit**

systematic, independent and documented process for obtaining evidence and evaluating it objectively to determine the extent to which requirements are fulfilled

**3.20
nonconformity**

non-fulfilment of a requirement

[ISO 9000:2005, definition 3.6.2]

**3.21
organization**

company, corporation, firm, enterprise, authority or institution, or part or combination thereof, whether incorporated or not, public or private, that has its own functions and administration and that has the authority to control its energy use and consumption.

NOTE An organization can be a person or group of people.

3.22

preventive action

action to eliminate the cause of a potential nonconformity

NOTE 1 There can be more than one cause for a potential nonconformity.

NOTE 2 Preventive action is taken to prevent occurrence whereas corrective action is taken to prevent recurrence.

3.23

procedure

specified way to carry out an activity or a process

NOTE 1 Procedures can be documented or not.

NOTE 2 When a procedure is documented, the term "written procedure" or "documented procedure" is frequently used. The document that contains a procedure can be called a "procedure document."

[ISO 9000:2005, definition 3.4.5]

3.24

product

result of a process

3.25

record

document stating results achieved or providing evidence of activities performed

NOTE Records can be used, for example, to document traceability and to provide evidence of verification, preventive action and corrective action.

[ISO 9000:2005, definition 3.7.6]

3.26

scope

extent of activities, facilities and decisions which the organization addresses through an EnMS, which can include several boundaries

3.27

significant energy use

energy use accounting for substantial energy consumption and/or offering considerable potential for energy performance improvement

NOTE Significance criteria are determined by the organization.

3.28

team

person(s) responsible for effective implementation of the energy management system activities and for delivering energy performance improvements

NOTE The size and nature of the organization, and available resources, will determine the size of the team. The team may be one person, such as the management representative.

3.29

top management

person or group of people who directs and controls an organization at the highest level

NOTE Top management controls the organization defined within the scope of the management system for energy.

[ISO 9000:2005, definition 3.2.7]