INTERNATIONAL STANDARD

ISO 14034

First edition
2016-11-15

Environmental management — Environmental technology verification (ETV)

Management environnemental — Vérification des technologies environnementales (ETV)

Reference number
ISO 14034:2016(E)

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 4, *Environmental performance evaluation*.

In the development of this document, ISO Guide 82 has been taken into account in addressing sustainability issues.

Introduction

The objective of environmental technology verification (ETV) is to provide credible, reliable and independent verification of the performance of environmental technologies. An environmental technology is a technology that either results in an environmental added value or measures parameters that indicate an environmental impact. Such technologies have an increasingly important role in addressing environmental challenges and achieving sustainable development.

ETV contributes to protection and conservation of the environment by promoting and facilitating market uptake of innovative environmental technologies, especially those that perform better than relevant alternatives. ETV is particularly applicable to those environmental technologies whose innovative features or performance cannot be fully assessed using existing standards. Through the provision of objective evidence, ETV provides an independent and impartial confirmation of the performance of an environmental technology based on reliable test data. ETV aims to strengthen the credibility of new, innovative technologies by supporting informed decision-making among interested parties.

ETV was established in the United States in 1995, and similar programmes were later introduced in other countries, including Canada, several European Union member states, Japan, South Korea and the Philippines. The performance of many environmental technologies has since been verified in these countries under ETV programmes established at either the national or international level. Interest in joint, mutually recognized verifications performed under different ETV programmes has increased over the past decade. In 2008, the International Working Group on ETV (IWG-ETV), composed of international experts representing institutions operating an ETV scheme in Canada, the United States, Japan, South Korea, the Philippines and the European Union, was established with the aim of exploring ways to accelerate international harmonization and mutual recognition of ETV programmes. The IWG-ETV reached a consensus that standardization of the ETV process by means of an International Standard is an appropriate way to establish the credibility and robustness of ETV world-wide.

Environmental management — Environmental technology verification (ETV)

1 Scope

This document specifies principles, procedures and requirements for environmental technology verification (ETV).

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/IEC 17020:2012, *Conformity assessment — Requirements for the operation of various types of bodies performing inspection*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 Terms related to organization

3.1.1
organization
person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

Note 1 to entry: The concept of organization includes, but is not limited to, sole-trader, company, corporation, firm, enterprise, authority, partnership, charity or institution, or part or combination thereof, whether incorporated or not, public or private.

[SOURCE: ISO 14001:2015, 3.1.4]

3.1.2
verifier
organization (3.1.1) that performs *environmental technology verification* (3.3.5)

3.1.3
test body
organization (3.1.1) providing an environment for testing, test-implementation and means for performing and reporting on the testing of an *environmental technology* (3.3.4)

3.1.4
applicant
organization (3.1.1) proposing a *technology* (3.3.1) for which *performance* (3.4.1) will be verified through an *environmental technology verification* (3.3.5)

EXAMPLE Technology developer; manufacturer; provider; legally authorized representative of the organization.

3.1.5
interested party
person or *organization* (3.1.1) being concerned with, affecting, being affected by, or perceiving itself to be affected by the results of *environmental technology verification* (3.3.5)

EXAMPLE Customer; user; community; supplier; developer; manufacturer; investor; regulator; non-governmental organization.

3.2 Terms related to verification

3.2.1
verification
confirmation through the provision of objective evidence

3.2.2
verification plan
planning document detailing the implementation of *environmental technology verification* (3.3.5)

3.2.3
verification report
document detailing *environmental technology verification* (3.3.5) and its results

3.2.4
verification statement
document summarizing the results of *environmental technology verification* (3.3.5)

3.2.5
test plan
planning document detailing the principles, test methods, conditions, procedures and *data quality* (3.2.6) required to carry out testing and to produce test data

3.2.6
data quality
characteristics of data that relate to their ability to satisfy stated requirements

[SOURCE: ISO 14040:2006, 3.19]

3.2.7
test report
document describing conditions and results of testing

3.3 Terms related to technology

3.3.1
technology
application of scientific knowledge, tools, techniques, crafts or systems in order to solve a problem or to achieve an objective which can result in a *product* (3.3.2) or *process* (3.3.3)

3.3.2
product
any goods or service

[SOURCE: ISO 14050:2009, 6.2, modified — Notes to entry have been deleted]

3.3.3
process
set of interrelated or interacting activities which transforms inputs into outputs

[SOURCE: ISO 14001:2015, 3.3.3]

3.3.4
environmental technology
technology (3.3.1) that either results in an *environmental added value* (3.3.7) or measures parameters that indicate an *environmental impact* (3.3.6)

3.3.5
environmental technology verification
verification (3.2.1) of the *performance* (3.4.1) of an e*nvironmental technology* (3.3.4) by a *verifier* (3.1.2)

3.3.6
environmental impact
change to the environment, whether adverse or beneficial, wholly or partially resulting from material acquisition, design, production, use or end-of-use of a *technology* (3.3.1)

[SOURCE: ISO 14001:2015, 3.2.4, modified — The words "resulting from an organization's environmental aspects" have been replaced by "resulting from material acquisition, design, production, use or end-of-use of a technology".]

3.3.7
environmental added value
more beneficial or less adverse *environmental impact* (3.3.6) of a *technology* (3.3.1) with respect to the *relevant alternative* (3.3.8)

3.3.8
relevant alternative
technology (3.3.1) applied currently in a similar situation to the *environmental technology* (3.3.4) for which *performance* (3.4.1) will be verified through *environmental technology verification* (3.3.5)

3.4 Terms related to performance

3.4.1
performance
measurable result

Note 1 to entry: Performance relates to measurable results supported by numerical quantitative findings.

[SOURCE: ISO 14001:2015, 3.4.10, modified — Note 1 to entry has been modified and Note 2 to entry has been deleted because the definition refers to specific measurements related to technologies.]

3.4.2
performance claim
statement of *performance* (3.4.1) of the *environmental technology* (3.3.4) declared by the *applicant* (3.1.4)

3.4.3
performance parameter
numerical or other measurable factor of the *performance* (3.4.1) of a *technology* (3.3.1)

4 General principles and requirements

4.1 Principles

4.1.1 General

The purpose of environmental technology verification is to provide a credible and impartial account of the performance of environmental technologies. Environmental technology verification is based on a number of principles to ensure that verifications are performed and reported accurately, clearly, unambiguously and objectively.

4.1.2 Factual approach

Verification statements are based on factual and relevant evidence confirming objectively the performance of environmental technologies.

4.1.3 Sustainability

Environmental technology verification is a tool that supports sustainability by providing credible information on the performance of environmental technologies.

4.1.4 Transparency and credibility

Environmental technology verification is based on reliable test results and robust procedures. The process is facilitated such that, to the greatest extent possible, methods and data are fully disclosed and reports are clear, complete, objective and useful to the interested parties.

4.1.5 Flexibility

To maximize the utility of results, environmental technology verification allows for flexibility in the specification of the performance parameters and test methods. This is achieved through a dialogue between the applicant, verifier and interested parties.

4.2 Requirements

When verifying the performance of environmental technologies, the requirements of this document and ISO/IEC 17020:2012 shall be applied and demonstrated.

Annex A shows the relationship between this document and ISO/IEC 17020:2012.

5 Environmental technology verification

5.1 General

This clause outlines key procedures of the environmental technology verification:

— application;

— pre-verification;

— verification;

— reporting;

— post-verification.

Unless specified otherwise, these procedures are performed by the verifier.

Annex B shows an overview of the environmental technology verification and Annex C gives guidance for the use of this document.

5.2 Application

5.2.1 Application requirements

The applicant shall provide to the verifier the following information at a minimum:

a) information about the applicant, including its name and address(es) of its physical location(s)

b) description of the technology:

   1) a unique identifier for the technology (e.g. a commercial name, an identification number or version number);

   2) information about the intended application of the technology expressed in terms of:

      i) technology purpose,

      ii) type of material that the technology is intended for,

      iii) measurable property that is affected by the technology and the way in which it is affected;

   NOTE 1 More than one technology purpose, type of material and measurable property can be provided.

   3) information sufficient to understand the operation and performance of the technology;

   4) development status of the technology proposed for verification and its readiness for market;

   NOTE 2 Technology proposed for verification needs to be either already available on the market or available at least at a stage where no substantial change affecting its performance will be implemented before its market entry.

   5) information on relevant alternative of the technology; including its relevant performance and environmental impacts;

   6) information on significant environmental impacts of the technology proposed for verification and its environmental added value, if applicable.

c) performance claim including a proposed set of performance parameters and their numerical values to be verified;

d) relevant existing test data and methods for acquiring these data that were applied to support the performance claim;

e) any relevant legal requirements, or standards related to the technology and its use;

f) if relevant, a statement that the technology adheres to applicable regulatory requirements;

g) supporting information relevant to the interested parties including the following, but not limited to:

   1) installation and operating requirements and conditions;

   2) service and maintenance requirements;

   3) expected length of time for which a technology functions under normal operating conditions, and;

   4) any applicable health and safety requirements and considerations.

5.2.2 Application review

5.2.2.1 Administrative review

Administrative review shall ensure that all information requested for the application has been provided in accordance with the requirements specified in 5.2.1.

5.2.2.2 Technical review

Technical review shall ensure that:

a) the technology fulfils the definition of environmental technology (3.3.4);

b) the performance claim for the intended application of the technology addresses the needs of the interested parties;

c) the information on the technology is sufficient to review the performance claim.

Any issues related to the acceptance or rejection of the application that may arise from the administrative or the technical review shall be resolved prior to the verification. Acceptance or rejection of the application shall be communicated to the applicant with justification.

5.3 Pre-verification

5.3.1 Specification of performance to be verified

Performance to be verified shall be expressed by means of performance parameters in consultation with the applicant prior to the establishment of a verification plan. These performance parameters shall be specified considering, at a minimum:

a) they are relevant and sufficient for the verification of the performance of the environmental technology, and its environmental added value, if applicable;

b) they correspond in full to the needs of the interested parties;

c) they can be quantitatively verified through testing;

d) their numerical values can be verified under set operating conditions;

e) existing verification plans and relevant technical references including standard test methods, preferably international standards.

5.3.2 Verification planning

The verification plan shall detail the verification procedure specific to the technology and the performance to be verified. The test conditions specified in the verification plan shall be identical to the operating conditions of the technology defined in 5.3.1.

The verification plan shall include at a minimum:

a) identification of the verifier;

b) identification of the applicant in accordance with 5.2.1;

c) unique identification of the verification plan and date of issue;

d) a description of the technology in accordance with 5.2.1;

e) a list of performance parameters as defined in 5.3.1, their assigned numerical values and the description of how they will be verified;

