
**Earth-moving machinery —
Conformity assessment and
certification process**

*Engins de terrassement — Processus d'évaluation de la conformité et
de certification*

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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 ISO/TC 127, *Earth-moving machinery*.

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Introduction

Background

ISO Technical committee, ISO/TC 127, *Earth-moving machinery*, was formed in 1968 to promote harmonization of global safety requirements for the already global earth-moving machine (EMM) industry. The goal of the committee is to pro-actively develop International Standards to address all safety risks for its machines.

EMM manufacturers use the standards to achieve a high level of safety for machines to meet the safety expectations of customers and health and safety groups. The EMM industry strives to develop machines that are recognized as *safe* machines, and allow its manufacturers to use ISO/IEC 17050, and for supplier's declarations of conformity (SDoC). Third party certification might be required by countries where manufacturers may lack the necessary expertise or testing facilities to do their own conformity assessment testing for SDoC.

Challenge

Earth-moving machines are low-production volume compared to automobiles or home appliances. The yearly sales for many models is less than 10 machines per country. Repeated conformity assessment testing causes significant time delays and added cost for customers, if third party testing and certification are required in each country.

United Nations Economic Commission for Europe (UNECE) project

To address this challenge, the EMM industry started a "model regulation project" in the UNECE's Working Party (WP) 6. The purpose of WP 6 is to facilitate global harmonization of standards, regulations and conformity assessment processes. The UNECE EMM model regulation project includes

- developing and complying with International Standards developed by ISO/TC 127,
- using the requirements of the standards as the technical requirements for national safety regulations,
- accepting conformity assessment testing completed by manufacturers for compliance to standards, and
- accepting SDoC for compliance with regulations.

With the requirement for third party certification in some countries, the EMM model regulation project allows third party certification in the short-term, with provisions to accept testing by manufacturers for the third party certification *without repeating the testing*. If third party certification is required, the project promotes the acceptance of a single third party certification by all countries, thereby avoiding unnecessary costs and time delays.

Current status

The application of International Standards and the conformity assessment process by machine manufacturers is a major element for achieving the goal of "zero injury and zero harm" on user worksites around the world.

The SDoC assessment process completed by manufacturers demonstrates compliance for the entire machine, including all of its systems, components and parts. Additional conformity assessment is not necessary for replacement parts that were already covered in the manufacturer's machine conformity assessment process.

The UNECE WP 6 Model Regulation has been well received in countries where the UNECE project team has provided training seminars.

To further facilitate the use of the EMM model regulation process, this Technical Report documents the process.

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Earth-moving machinery — Conformity assessment and certification process

1 Scope

This document presents a process for conformity assessment and certification for earth-moving machinery as defined in ISO 6165. This includes a presentation of the characteristics of standards to be used for conformity assessment of the machines, a process for testing to demonstrate compliance with those standards, and a process for third party certification where such certification is required.

The global objective for the earth-moving machinery industry is acceptance and use of supplier's declarations of conformity (SDoC) according to ISO/IEC 17050. This document includes provisions for third party certification in countries or regions where SDoC is not accepted.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 6165, *Earth-moving machinery — Basic types — Identification and terms and definitions*

ISO/IEC 17050-1, *Conformity assessment — Supplier's declaration of conformity — Part 1: General requirements*

ISO/IEC 17050-2, *Conformity assessment — Supplier's declaration of conformity — Part 2: Supporting documentation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6165 and ISO/IEC 17000, and the following, apply.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 conformity assessment

demonstration that specified requirements relating to a product, process or system are fulfilled

[SOURCE: ISO/IEC 17000:2004, 2.1, modified — The words “person or body” and Notes 1 and 2 to entry have been omitted.]

3.2 product identification number PIN

unique set of 17 alphanumeric characters assigned to a complete machine by the manufacturer for identification purposes

[SOURCE: ISO 10261]

4 Process

4.1 General

This document presents

- the elements needed by standards used in the conformity assessment of earth-moving machines,
- a conformity assessment process for demonstrating compliance with those standards, and
- a global process for conformity assessment.

The conformity assessment process should demonstrate compliance for the entire machine, including all its systems, components and parts.

Using this process, additional conformity assessment for systems, components and parts will not be necessary for replacement parts covered by the manufacturer's original machine conformity assessment.

4.2 Characteristics of standards used for conformity assessment

4.2.1 Earth-moving machine (EMM) standards

An EMM standard used for conformity assessment should

- address all safety risks for the machines to meet the safety expectations of customers and health and safety organizations,
- provide the appropriate information to ensure that the testing and verification show compliance with the standards,
- ensure repeatable results.

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4.2.2 Characteristics of conformity assessment standards

Conformity assessment standards should have the following characteristics:

- a scope that clearly and explicitly defines the machines that are covered and the risks to be addressed,
- clear and concise definitions that will enable consistent interpretation and application of the standard,
- specific performance and safety criteria, comprising detailed performance requirements that address the safety risks for earth-moving machines,
- detailed test methods and procedures that will ensure accurate and repeatable results
- a verification process with procedures to show compliance, and
- provision for a concise test report, including documentation of the test process and results.

4.2.3 ISO 20474

ISO 20474 is an International Standard that meets the objectives of standards for EMMs given in 4.2.1 to facilitate conformity assessment. This multi-part standard addresses all safety risks for earth-moving machines and has the characteristics set out in 4.2.2. It references other applicable standards and provides performance requirements. The first part in the series, ISO 20474-1, provides general safety requirements for all machines, while the other parts provide specific requirements for different EMM types.

The ISO 20474 series should be used for conformity assessment testing to demonstrate that a machine complies with safety requirements.

4.3 Demonstrating compliance with standards

The conformity assessment process needs to allow the same results to be obtained from any organization performing an assessment. For this, the organization will need the following:

- a quality plan at least equivalent to ISO 9000 for the manufacturing process and to ISO/IEC 17025 for the testing facilities;
- a quality plan for manufacturing facilities that ensures that the machines for the conformity testing are representative of the production machines;
- a quality plan for testing facilities that ensures accuracy and repeatability of the test results;
- a conformity assessment process that is documented, in order to ensure that it is definitive and repeatable;
- a conformity assessment group or person to manage the conformity assessment, with the facility having an experienced person capable of carrying out the assessment.
- access to conformity assessment/test facilities able to perform the conformity assessment, which can be internal to the manufacturer or an independent facility;
- documentation of test results, summarizing the results of the conformity assessment process.

Conformity assessment completed by the manufacturer is acceptable if the manufacturer meets these criteria.

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4.4 Certification process (standards.iteh.ai)

4.4.1 Global objective for certification

The global objective of the EMM industry is the acceptance of manufacturer's SDoC, as specified in ISO/IEC 17050, and a process as described here.

4.4.2 Provision for third party certification

This document provides for third party certification where manufacturers do not currently have the conformity assessment capability for SDoC.

When third party certification is required in countries or regions without SDoC, the aim is to allow

- a) conformity assessment testing completed by the manufacturer according to 4.3 that is acceptable for third party certification, and
- b) certification according to this document that is acceptable in all countries.

5 Information for conformity assessment

5.1 Technical construction file

A technical construction file should be created listing all test reports and information that demonstrate compliance with the requirements for conformity assessment in, for example, ISO 20474.