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**Mechanical vibration and shock —  
Vibration of stationary structures —  
Specific requirements for quality  
management in measurement and  
evaluation of vibration**

*Vibrations et chocs mécaniques — Vibrations des structures fixes —  
Exigences spécifiques pour le management de la qualité dans le mesurage  
et l'évaluation des vibrations*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 14964 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration and shock*, Subcommittee SC 2, *Measurement and evaluation of mechanical vibration and shock as applied to machines, vehicles and structures*.

Annex A of this International Standard is for information only.

## Introduction

In order to accomplish its objective, a body which has the charge of measurement and evaluation of vibration in structures should organize itself in such a way that the technical and human factors affecting the quality of its service will be under control. The aim of such control is primarily to foresee and detect all error sources and nonconformity during different stages of the process (choice of operating method and equipment, monitoring, data processing, definition and determination of parameters).

A quality system should be developed in order to achieve optimum effectiveness and to satisfy customer expectations.

An objectively defined quality management has the following purposes:

- customer confidence;
- company development in the market place;
- accreditation;
- criteria for public authorities when designating bodies for regulatory purposes;
- selection of expert witness.

Quality standards like the ISO 9000 family of standards describe the organizational structure, responsibilities, procedures and resources that are used for implementing a quality management system.

Technical standards like ISO 2631-2 and ISO 4866 define the basic requirements and the methods to be applied in order to accomplish a successful evaluation of vibration. This may range from simple monitoring at a given position and time to research and diagnostic studies.

This International Standard is complementary to the quality standards of the ISO 9000 series. It gives guidelines for specific requirements of these series when applied to Measuring and Evaluation Bodies of stationary-structure vibration. This International Standard therefore is an interface between the technical standard ISO 4866 and quality management standards.

Specific aspects of measurement and evaluation of vibration and shock in stationary structures are as follows.

- a) Measurement and evaluation of vibration in structures can be defined as a service according to ISO 8402 and ISO 9004-2, but often requires advanced expertise and, in some cases, research work.
- b) The contract reviews and the relationships between the Measuring and Evaluation Body and the customer are different from those of ordinary service. In most cases the Measuring and Evaluation Body is the consultant to the customer and the contract contains only a demand for a solution without any detailed task specification.
- c) If the purpose of the measurements is to evaluate the maximum responses in a complicated structure, some flexibility in the investigation procedure may be needed and allowed for in any contracted arrangement.
- d) For some vibration events, the information captured cannot be formally verified as in ISO 10012-1 by a true replication (for example, explosion, demolition and some other kinds of random motion).
- e) It is recognized that, within many organizations, the Measuring and Evaluation Body is composed of few persons, sometimes of only one or two, so that formal management structures and reviews may be difficult to apply.

# Mechanical vibration and shock — Vibration of stationary structures — Specific requirements for quality management in measurement and evaluation of vibration

## 1 Scope

This International Standard gives guidelines on specific requirements of the ISO 9000 family of standards when applied to Measuring and Evaluation Bodies of stationary-structure vibration. This International Standard therefore is complementary to the quality standards of the ISO 9000 series and acts as an interface between the technical standard ISO 4866 and quality management standards.

The measurement and evaluation of vibration in structures is an important task on which may depend structure serviceability and man's comfort and/or safety. The different stages up to the final report are related to one another. In order to give confidence to the final results, it is necessary to assure the quality of execution of each stage.

This International Standard is applicable in contractual situations when certain capabilities to measure and evaluate vibration effects on structures have to be demonstrated.

This International Standard is applicable to different stages in the evaluation of vibration, as follows:

- the contract review;
- the choice of the method of investigation;
- the choice of the measuring location;
- the selection of the measuring equipment;
- the data-processing procedure;
- the elements for diagnosis.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 4866, *Mechanical vibration and shock — Vibration of buildings — Guidelines for the measurement of vibrations and evaluation of their effects on buildings*.

ISO 9000 (all parts), *Quality management and quality assurance standards*.