
Condition monitoring and diagnostics of machines — Acoustic emission

Surveillance et diagnostic d'état des machines — Émission acoustique



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Foreword

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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 22096 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 5, *Condition monitoring and diagnostics of machines*.

Introduction

Acoustic emission (AE) technology can be used as a stand-alone condition monitoring technique that may also be employed to complement other condition monitoring techniques based on other technologies (e.g. vibration, infrared, etc.) used for machine condition analysis and diagnosis/prognosis. Due to the nature of AE, an understanding of the operating mechanics of the monitored machine is not essential, but such an understanding allows the maximum amount of data to be extracted from the results of the AE phenomena. As a diagnostic tool for machine condition monitoring, AE can be employed as a permanently installed, semi-permanent or portable system, depending on the criticality of the machine. Typically, an AE system would contain transducers, amplifiers, filters and data acquisition systems. Depending on the particular application, a range of AE characteristics can be extracted from the captured AE to provide indicators for machine condition monitoring.

Condition monitoring and diagnostics of machines — Acoustic emission

1 Scope

This International Standard specifies the general principles required for the application of acoustic emission (AE) to condition monitoring and diagnostics of machinery operating under a range of conditions and environments. It is applicable to all machinery and associated components and covers structure-borne measurements only.

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 2041, *Vibration and shock — Vocabulary*

ISO 12718, *Non-destructive testing — Eddy current testing — Vocabulary*

ISO 13372, *Condition monitoring and diagnostics of machines — Vocabulary*

ISO 18436-6, *Condition monitoring and diagnostics of machines — Requirements for training and certification of personnel — Part 6: Acoustic emission*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 2041, ISO 12718, ISO 13372 and the following apply.

3.1

acoustic emission

⟨machine monitoring⟩ range of phenomena that results in the generation of structure-borne and fluid-borne (liquid, gas) propagating waves due to the rapid release of energy from localized sources within and/or on the surface of a material

NOTE 1 Such a release may be a result of a process such as crack propagation, friction, impact, and leakage.

NOTE 2 The definition of acoustic emission in this document conveys its broad application in machine monitoring.

3.2

acoustic emission monitoring

⟨machine monitoring⟩ detection and collection of information and acoustic emission data that indicate the state of a machine

NOTE The definition of acoustic emission monitoring in this document relates to the application in machine monitoring.