
**Condition monitoring and diagnostics
of machines — Data interpretation and
diagnostics techniques —**

**Part 1:
General guidelines**

*Surveillance et diagnostic d'état des machines — Interprétation des
données et techniques de diagnostic —*

Partie 1: Lignes directrices générales



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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.

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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 13379-1 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 5, *Condition monitoring and diagnostics of machines*.

This first edition of ISO 13379-1 cancels and replaces ISO 13379:2003, which has been technically revised.

ISO 13379 consists of the following parts, under the general title *Condition monitoring and diagnostics of machines — Data interpretation and diagnostics techniques*:

— *Part 1: General guidelines*

The following parts are planned:

— *Part 2: Data-driven applications*

— *Part 3: Knowledge-based applications*

Introduction

This part of ISO 13379 contains general procedures that can be used to determine the condition of a machine relative to a set of baseline parameters. Changes from the baseline values and comparison to alarm criteria are used to indicate anomalous behaviour and to generate alarms: this is usually designated as condition monitoring. Additionally, procedures that identify the cause(s) of the anomalous behaviour are given in order to assist in the determination of the proper corrective action: this is usually designated as diagnostics.

Condition monitoring and diagnostics of machines — Data interpretation and diagnostics techniques —

Part 1: General guidelines

1 Scope

This part of ISO 13379 gives guidelines for the data interpretation and diagnostics of machines. It is intended to

- allow the users and manufacturers of condition monitoring and diagnostics systems to share common concepts in the fields of machine diagnostics;
- enable users to prepare the necessary technical characteristics that are used for the further diagnosis of the condition of the machine;
- give an appropriate approach to achieve a diagnosis of machine faults.

Since these are general guidelines, a list of the machine types addressed is not included. However, the machine sets covered by this part of ISO 13379 normally include industrial machines such as turbines, compressors, pumps, generators, electrical motors, blowers, gearboxes, and fans.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

3 Terms and definitions

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

4 Condition monitoring set-up and diagnostics requirements

4.1 Role of diagnostics in operation and maintenance

Diagnostics have an essential role in decision making for operation and maintenance tasks. In order to be effective, diagnostics procedures should be set up according to the faults that can occur in the machine. Therefore, it is strongly recommended that a preliminary study be carried out when preparing the requirements for the condition monitoring and diagnostics system of a machine.

4.2 Establishing diagnostics needs

The principle of this study is shown in Figure 1. The V-shape has been intentionally chosen to represent the high-level concerns (maintenance: machine, risk assessment) and the “low level” ones (measurements: monitoring, periodical tests, data processing).

The left branch corresponds to the preliminary study, which prepares, for a particular machine, the necessary data for condition monitoring and diagnostics. The right branch of the sketch corresponds to the condition