
**Mechanical vibration — Evaluation of
machine vibration by measurements on
rotating shafts —**

**Part 3:
Coupled industrial machines**

*Vibrations mécaniques — Évaluation des vibrations des machines par
mesurages sur les arbres tournants —*

Partie 3: Machines industrielles couplées



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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 7919-3 was prepared by Technical Committee ISO/TC 108, *Mechanical vibration, shock and condition monitoring*, Subcommittee SC 2, *Measurement and evaluation of mechanical vibration and shock as applied to machines, vehicles and structures*.

This second edition cancels and replaces the first edition (ISO 7919-3:1996), of which it constitutes a minor revision. It also incorporates the Technical Corrigendum ISO 7919-3:1996/Cor.1:2007.

ISO 7919 consists of the following parts, under the general title *Mechanical vibration — Evaluation of machine vibration by measurements on rotating shafts*:

- *Part 1: General guidelines*
- *Part 2: Land-based steam turbines and generators in excess of 50 MW with normal operating speeds of 1 500 r/min, 1 800 r/min, 3 000 r/min and 3 600 r/min*
- *Part 3: Coupled industrial machines*
- *Part 4: Gas turbine sets with fluid-film bearings*
- *Part 5: Machine sets in hydraulic power generating and pumping plants*

Introduction

This part of ISO 7919 specifies guidelines for measuring transverse shaft vibration on coupled industrial machines. Evaluation criteria, based on previous experience, are given for use as guidelines for assessing the vibratory conditions of such machines.

A general description of the principles that are generally applicable for the measurement and evaluation of shaft vibration of non-reciprocating machines is outlined in ISO 7919-1.

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Mechanical vibration — Evaluation of machine vibration by measurements on rotating shafts —

Part 3: Coupled industrial machines

1 Scope

This part of ISO 7919 gives guidelines for applying evaluation criteria of shaft vibration under normal operating conditions, measured at or close to the bearings of coupled industrial machines. These guidelines are presented in terms of both steady running vibration and any amplitude changes which can occur in these steady values. The numerical values specified are not intended to serve as the only basis for vibration evaluation since, in general, the vibratory condition of a machine is assessed by consideration of both the shaft vibration and the associated structural vibration.

This part of ISO 7919 applies to coupled industrial machines with fluid-film bearings, having maximum continuous rated speeds in the range 1 000 r/min to 30 000 r/min and not limited by size and power, comprising

- steam turbines,
- turbocompressors,
- turbogenerators,
- turbofans,
- electric drives and associated gears, where relevant, and
- rotodynamic pumps (turbo pumps).

The information relating to pumps provided in this part of ISO 7919 complements that given in ISO 10816-7. In particular, the conditions for *in-situ* operation, performing acceptance tests and the influence of bearing clearance given in ISO 10816-7 shall be taken into account when evaluating the shaft vibration of pumps

This part of ISO 7919 is neither applicable to land-based steam turbine-generator sets for power stations with outputs greater than 50 MW (see ISO 7919-2), nor machine sets in hydraulic power generating and pumping plants with outputs of 1 MW or greater (see ISO 7919-5).

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 7919-1, *Mechanical vibration of non-reciprocating machines — Measurements on rotating shafts and evaluation criteria — Part 1: General guidelines*