



BSI Standards Publication

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

Part 4: Gas turbine sets with fluid-film bearings

National foreword

This British Standard is the UK implementation of ISO 7919-4:2009+A1:2017. It supersedes BS ISO 7919-4:2009, which is withdrawn.

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

Part 4: Gas turbine sets with fluid- film bearings

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

Partie 4: Turbines à gaz à paliers à film fluide



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Foreword

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This document 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 7919-4:1996), which has been technically revised. The main changes are:

- clarification that the document applies only to gas turbine sets with fluid-film bearings;
- emphasis on acceptance specifications always being agreed on between the supplier and the purchaser of the gas turbine set prior to installation;
- the addition of provisions for evaluating the vibration of coupled gas turbine sets during transient operation;
- closer alignment of this part of ISO 7919 with ISO 10816-4.

A list of all parts in the ISO 7919 series can be found on the ISO website. 

Introduction

ISO 20816-1 gives general guidelines for evaluating the vibration of various machine types when the vibration measurements are made on rotating and on non-rotating (and, where applicable, non-reciprocating) parts of complete machines. This part of ISO 7919 gives specific provisions for assessing the severity of radial shaft vibration measured at, or close to, the bearings of gas turbine sets. Measurements at these locations characterize the state of vibration reasonably well. Evaluation criteria, based on previous experience, are presented. These can be used for assessing the vibratory condition of such machines.

Two criteria are provided for assessing the machine vibration when operating under steady-state conditions. One criterion considers the magnitude of the observed vibration; the second considers changes in the magnitude. In addition, different criteria are provided for transient operating conditions. However, shaft vibration does not form the only basis for judging the severity of vibration. For gas turbine sets, it is also common to judge the vibration based on measurements taken on non-rotating parts. For such vibration measurement requirements, see ISO 20816-1 and ISO 10816-4.

The evaluation procedures presented in this part of ISO 7919 are based on broad-band measurements. However, because of advances in technology, the use of narrow-band measurements or spectral analysis has become increasingly widespread, particularly for the purposes of vibration evaluation, condition monitoring and diagnostics. The specification of criteria for such measurements is beyond the scope of this part of ISO 7919. They are dealt with in greater detail in ISO 13373 (all parts), which establish provisions for the vibration condition monitoring of machines.

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