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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Mechanical vibration - Measurement and evaluation of machine
vibration - Part 1: General guidelines**
(English Translation)

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is part 1 of GB/T 41850 Mechanical vibration - Measurement and evaluation of machine vibration. GB/T 41850 has been published.

The following parts.

- Part 1: General;
- Part 8: Reciprocating compressor systems;
- Part 9: Gear units.

This document is equivalent to ISO 20816-1:2016 "Mechanical vibration - Measurement and evaluation of machine vibration - Part 1: General".

Introduction

GB/T 41850 "Mechanical vibration - Measurement and evaluation of machine vibration" provides the measurement and evaluation of vibration on non-rotating parts and rotating shafts.

The requirements and guidelines for machine vibration are intended to consist of the following parts.

- Part 1: General. The purpose is to give a general description of the measurement and evaluation of various types of machine vibration on non-rotating parts and rotating shafts.

General requirements.

- Part 2: 40MW and above, using sliding bearings, rated speed is 1500r/min, 1800r/min, 3000r/min and 3600r/min land-mounted gas turbines, steam turbines and generators. The purpose is to give the gas turbines installed on large land Detailed evaluation of bearing housing vibrations and shaft vibrations in turbines, steam turbines and generators.

- Part 4: Gas turbines with sliding bearings above 3 MW. The purpose is to give gas turbines not covered in Part 2.

Detailed evaluation of machine bearing housing vibration and shaft vibration.

- Part 5: Hydroelectric and pumped storage power station units. The purpose is to give the bearings of hydroelectric and pumped storage power station units Guide for the measurement and evaluation of seat and shaft vibrations.

- Part 8: Reciprocating compressor systems. The purpose is to establish specific

requirements for the measurement and classification of mechanical vibrations in reciprocating compressor systems.

specific procedures and guidelines.

--- Part 9: Gearing. The purpose is to give specific provisions for measuring and evaluating vibration of gearing.

Mechanical vibration Measurement and evaluation of machine vibration Part 1: General

1 Scope

This document specifies general conditions and procedures for measuring and evaluating machine vibration on rotating, non-rotating and non-reciprocating parts of complete machines.

This document is applicable to the measurement of absolute radial shaft vibration and relative shaft vibration during radial clearance monitoring, but not to axial shaft vibration.

The criteria include vibration magnitude and vibration change, which are used for operation monitoring and acceptance testing. The evaluation criteria are mainly to ensure the reliability, this document also provides guidance on setting operational limits.

NOTE 1 Other parts of ISO 20816 contain evaluation criteria for different categories of machines. Guidance on evaluation criteria is given in Chapter 6 of this document.

NOTE 2 Since most measurements are made on machine shafts, the term "shaft vibration" applies throughout ISO 20816.

Rotating parts are more appropriate and the ISO 20816 series is also applicable to measurements on such rotating parts provided the guidelines are followed.

Operation monitoring in ISO 20816 is considered to be the vibration measurement of the machine during normal operation. ISO 20816 allows the use of different measurement methods.

The premise is to clearly define these quantities and measurement methods and point out their limitations so that the measurement is fully understood.

Explanation of quantity.

The evaluation criteria are only related to the vibration generated by the machine itself and have nothing to do with the vibration transmitted to the machine from the outside.

Torsional vibrations are not considered in this document.

NOTE 3 For torsional vibration, see ISO 3046-5, ISO 22266-1 or VDI 2039.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the latest version (including all amendments) applies to this document.

document.

Note: GB/T 13824-2015 Requirements for vibration severity measuring instruments for mechanical vibration of rotating and reciprocating machines (ISO 2954:2012, IDT) Note. GB/T 14412-2005 Mechanical installation of mechanical vibration and shock accelerometers (ISO 5348:1998, IDT) ISO 10817-1 Rotating shaft vibration measurement systems Part 1: Relative and absolute detection of radial vibration Note. GB/T 21487.1-2008 Shaft vibration measurement systems Part 1: Relative and absolute detection of radial vibration (ISO 10817-1:1998, IDT)

3 Terms and definitions

There are no terms or definitions that require definition in this document.