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

GB/T 41850.9-2024

**Mechanical vibration - Measurement and evaluation of machine
vibration - Part 9: Gear units
(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 9 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 20816-9:2020 "Mechanical vibration - Measurement and evaluation of machine vibration - Part 9: Gear units".

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: For engines with a capacity of 40MW or more and using sliding bearings, the 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 9: Gear units

1 Scope

This document specifies the specific requirements for the determination and classification of mechanical vibrations in single-cased, enclosed step-up or step-down gear units.

The method of measuring housing vibration and shaft vibration is given, as well as the instrument type, measurement method and test procedure for determining the vibration value.

The vibration levels used for acceptance are given.

This document does not cover the measurement of torsional vibrations.

This document applies to the acceptance of gear units operating within their design speed, load, temperature and lubrication ranges at the manufacturer's facilities.

This document can also be used to guide site acceptance testing and routine operational measurements, as agreed between the manufacturer and the customer and/or operator.

This document is applicable to rated power of 10kW~100MW and rated speed of 30r/min~12000r/min (0.5Hz~200Hz) gear device.

This document does not apply to special or auxiliary drive trains, such as integrated gear

driven compressors, pumps, turbines, etc. or to those used in combined cycle turbines.

Gear clutch between the turbine generator and the power output gear.

The evaluation criteria provided in this document can be applied to the vibration of the main input and output shaft bearings and the vibration of the internal shaft bearings of the gearbox.

This document is not intended to be used to assess the condition of gears.

This document establishes the provisions for the evaluation of broadband vibration severity of the following sites under normal stable operating conditions.

- a) Structural vibration measured radially (i.e. lateral) at all main bearing housings or foundations;
- b) Structural vibration measured axially in the thrust bearing housing;
- c) radial (i.e. lateral) vibration of the rotating shaft at or near the main bearing;
- d) Structural vibration of the gearbox.

NOTE This document does not cover vibrations occurring under non-steady-state conditions (when transient changes occur), including increasing or decreasing speed, initial loading and changes in load.

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 version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

ring-Vocabulary)

Note: GB/T 2298-2010 Mechanical vibration, shock and condition monitoring vocabulary (ISO 2041:2009, IDT) Note. GB/T 13824-2015 Requirements for vibration severity measuring instruments for mechanical vibration of rotating and reciprocating machines (ISO 2954:2012, IDT) ISO 10817-1 Rotating shaft vibration measurement systems Part 1: Relative and absolute detection of radial vibration (Rotatingshaftvibra-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

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