



American
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Association

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AGMA Information Sheet

Condition Monitoring and
Diagnostics of Gear Units and
Open Gears: Part 1 - Basics

American
Gear
Manufacturers
Association

Condition Monitoring and Diagnostics of Gear Units and Open Gears: Part 1 - Basics

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ABSTRACT

This information sheet provides basic overviews of key approaches to establishing a condition monitoring and diagnostics program for open gearing and enclosed gear units.

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Foreword

[The foreword, footnotes and annexes, if any, in this document are provided for informational purposes only and are not to be construed as a part of AGMA Information Sheet, 919-1-A14, *Condition Monitoring and Diagnostics of Gear Units and Open Gears: Part 1 - Basics*.]

The AGMA Sound and Vibration committee developed this information sheet to offer basic principles for a condition monitoring program.

Part two of this information sheet will provide additional details of the concepts discussed in this document.

The first draft of AGMA 919-1-A14 was made in August, 2013. It was approved by the AGMA membership on April 25, 2014.

Suggestions for improvement of this standard will be welcome. They may be submitted to tech@agma.org.

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Condition Monitoring and Diagnostics of Gear Units and Open Gears: Part 1 - Basics

1 Scope

This information sheet provides basic overviews of key approaches to establishing a condition monitoring and diagnostics program for open gearing and enclosed gear units. This information sheet attempts to inform the reader of the common techniques used and parameters measured for condition monitoring of a gear unit allowing the reader to build a program based on individual needs. Due to the wide variety of gearing applications some approaches discussed may not be appropriate in all situations.

This information sheet is intended for use by someone with a technical background.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this information sheet. At the time of publication, the editions indicated were valid. All publications are subject to revision, and the users of this information sheet are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ANSI/AGMA 1010, *Appearance of Gear Teeth - Terminology of Wear and Failure*

ANSI/AGMA 2015-1, *Accuracy Classification System - Tangential Measurements for Cylindrical Gears*

ANSI/AGMA 6000, *Specification for Measurement of Linear Vibration on Gear Units*

ANSI/AGMA 6014, *Gear Power Rating for Cylindrical Shell and Trunnion Supported Equipment*

ANSI/AGMA 9005, *Industrial Gear Lubrication*

ASTM A388/A388M-11, *Standard Practice for Ultrasonic Examination of Steel Forgings*

ASTM A609-12, *Standard Practice for Castings, Carbon, Low-Alloy, and Martensitic Stainless Steel, Ultrasonic Examination Thereof*

ASTM E165-12, *Standard Practice for Liquid Penetrant Examination for General Industry*

ASTM E709-08, *Standard Guide for Magnetic Particle Testing*

ASTM E1444-12, *Standard Practice for Magnetic Particle Testing*

ASTM E2491-13, *Standard Guide for Evaluating Performance Characteristics of Phased-Array Ultrasonic Testing Instruments and Systems*

ASTM E2700-09, *Standard Practice for Contact Ultrasonic Testing of Welds Using Phased Arrays*

ASTM E2905/E2905M-12, *Standard Practice for Examination of Mill and Kiln Girth Gear Teeth -- Electromagnetic Methods*

ISO 10816-1, *Mechanical vibration - Evaluation of machine vibration by measurements on non-rotating parts - Part 1: General guidelines*

ISO 10816-3, *Mechanical vibration -- Evaluation of machine vibration by measurements on non-rotating parts - Part 3: Industrial machines with nominal power above 15 kW and nominal speeds between 120 r/min and 15 000 r/min when measured in situ.*

ISO 10816-6, *Mechanical vibration -- Evaluation of machine vibration by measurements on non-rotating parts - Part 6: Reciprocating machines with power ratings above 100 kW*