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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 39238-2020

Non-destructive testing. Ultrasonic testing. Examination for discontinuities perpendicular to the surface

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Table of Contents

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the redrafting method to amend and adopt ISO 16826.2012 "Non-destructive testing, ultrasonic testing of discontinuous surfaces perpendicular to the surface"

Detection".

Compared with ISO 16826.2012, this standard adds a new article (4.7.1) in the structure, and the subsequent chapter numbers are reordered.

The technical differences between this standard and ISO 16826.2012 and the reasons are as follows.

--- Replace ISO 16810 with GB/T 39240, which is modified to adopt international standards (see Chapter 1);

--- Replace ISO 16811 (see Chapter 1) with GB/T 39242 modified to adopt international standards;

--- Replace ISO 5577 with GB/T 12604.1 equivalent to the international standard (see Chapter 3);

---Added a reference to GB/T 20737 (see Chapter 3);

--- Deleted EN1330-4 (see Chapter 2 of ISO 16826.2012).

This standard has made the following editorial changes.

---Adjusted the number of formulas in the text.

This standard was proposed and managed by the National Standardization Technical Committee for Nondestructive Testing (SAC/TC56).

Drafting organizations of this standard. Shanghai Materials Research Institute, State Grid Shanghai Electric Power Research Institute, China Petroleum and Natural Gas Pipeline Division

Research Institute Co., Ltd., State Grid Zhejiang Electric Power Co., Ltd. Electric Power Research Institute, Jiangsu Fangtian Power Technology Co., Ltd., China Guangdong Nuclear Power

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Co., Ltd., Jingjiang Advanced Materials Technology Research Institute of Shanghai Institute of Materials.

1 Scope

This standard specifies the discontinuous tandem ultrasonic testing method perpendicular to the surface and the longitudinal wave-longitudinal wave-transverse wave (LLT) ultrasonic testing method.

For general rules of ultrasonic testing, see GB/T 39240, and for symbols and definitions, see GB/T 39242.

This standard applies to metal materials with a thickness between 40mm and 500mm with parallel upper and lower surfaces or with coaxial surfaces.

Detection of discontinuous depths greater than 15mm perpendicular to the surface. Other materials and smaller thickness can be used as reference.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this document.

For undated references, the latest version (including all amendments) applies to this document.

GB/T 12604.1 Non-destructive testing term Ultrasonic testing (GB/T 12604.1-2005, ISO 5577.2000, IDT)

GB/T 20737 Non-destructive testing general terms and definitions (GB/T 20737-2006, ISO /T S18173.2005, IDT)

GB/T 39240 General rules for nondestructive testing and ultrasonic testing (GB/T 39240-2020, ISO 16810.2012, MOD)

GB/T 39242 Non-destructive testing ultrasonic testing sensitivity and range setting (GB/T 39242-2020, ISO 16811.2012, MOD)

3 Terms and definitions

The terms and definitions defined in GB/T 12604.1 and GB/T 20737 apply to this document.

4.1 Overview

Tandem detection usually uses two identical 45° oblique probes, one probe transmits the signal, the other probe receives the signal, the basic principle

see picture 1.When the wall thickness is greater than 160mm, in order to ensure that there are similar beam diameters in the detection area, probes with different transducer sizes are preferred.

Under certain geometric conditions, probes with other angles can be used, but waveform conversion should be avoided.

The probes are arranged along a straight line with the same incident direction of the sound beam. The sound beam of the rear probe is reflected by the

The center of the detection area intersects. The relationship between the probe spacing y, the detection depth tm from the intersection point to the upper surface, and the detection zone height tz is shown in Figure 1.