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PEOPLE'S REPUBLIC OF CHINA**

GB/T 46978-2026

**Non-destructive testing - Methods of alternating current field
measurement (ACFM) for metal structures**

无损检测 金属结构交流电磁场检测方法

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1.Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Nondestructive Testing (SAC/TC56). This document was drafted by: Shandong Special Equipment Inspection and Research Institute Group Co., Ltd., Shanghai Materials Research Institute Co., Ltd., and China National Petroleum Corporation. University (East China), Luko Testing Technology (Hainan) Co., Ltd., CGN Engineering Co., Ltd., CNOOC Shenzhen Marine Engineering Technology Service Co., Ltd. The company, China Special Equipment Inspection and Research Institute, Jiangsu Provincial Special Equipment Safety Supervision and Inspection Institute, China Nuclear Power Engineering Co., Ltd., Shandong Province Antai Chemical Pressure Vessel Inspection Center Co., Ltd. The main drafters of this document are. Li Wei, Jiang Jiansheng, Li Yishan, Ren Chuanhe, Wan Benli, Zhu Congbin, Du Ying, Zheng Wei, Wang Yuxin, Xu Min, and Liu Zhengcun. Ding Jie, Yuan Xin'an, Han Lina, Du Chenyang, Dai Jiahui, Zhang Weigang, Ma Yingbing, Li Chang, Zhu Jinhui, Ma Xiangdong, Zhao Jianming, Wang Weihua, Gao Yu Yin Xiaokang, Li Xiao, Gao Xiaozhe, Yang Fengqi, Wang Bingxin. Non-destructive testing methods for detecting AC electromagnetic fields in metallic structures

1 Scope

GB/T 46978-2026 is the Chinese national standard covering ACFM - a technique that measures the distortion of an induced current field around a surface crack and sizes it in depth as well as length, through paint and underwater, which is why it is the offshore inspector's tool. First edition, issued and in force on 28 January 2026, with the eddy current

array standard GB/T 34362-2026. It was issued on 28 January 2026 and has been in force since 28 January 2026, as a first edition. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes a method for inspecting metal structures using alternating electromagnetic field technology, and specifies the procedures for using alternating electromagnetic field technology to inspect metal structures. The testing method includes the process specifications, testing system, testing procedures, testing data and result evaluation, and testing report. This document applies to the detection of defects on and near the surface of metal structures with non-conductive coatings/covers less than 5 mm thick.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 12604.6 Nondestructive Testing Terminology. Eddy Current Testing

3 Terms and Definitions

The terms and definitions defined in GB/T 12604.6 and the following terms and definitions apply to this document.

3.1 excitation element A device that generates an alternating electromagnetic field.

Note. Includes coil and yoke.

3.2 A device for measuring magnetic fields and their changes.

Note. This is usually a magnetic sensor.

3.3 The excitation unit (3.1) induces a uniform alternating current locally in the inspected component. The defective part causes a disturbance in the induced current, which in turn leads to... The surface magnetic field distortion is detected by measuring the magnetic field distortion signal using a magnetic measurement unit (3.2) to achieve defect detection.

3.4 ACFMprobe probe It can induce a uniform current field in a metal structure and measure changes in the magnetic field, and includes an excitation unit (3.1) and a magnetic measurement unit (3.2). Probe.

3.5 BX signal The signal of the X-direction component of the magnetic induction intensity obtained by the probe, parallel to the scanning direction of the probe (3.4).

Note. See Figure 1.

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