ICS 19.100
CCS J04

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/Z 43410-2023

Non-destructive testing - Automated ultrasonic testing - Selection and application of systems

无损检测 自动超声检测 系统选择和应用

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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: This document is equivalent to ISO /T S16829:2017 "Selection and Application of Automatic Ultrasonic Testing Systems for Non-destructive Testing": The file type is: ISO 's technical specifications were adjusted into my country's national standardization guiding technical documents: Please note that some content in this document may be subject to patents: The publisher of this document assumes no responsibility for identifying patents: This document is proposed and coordinated by the National Nondestructive Testing Standardization Technical Committee (SAC/TC56): This document was drafted by: Wuhan Zhongke Innovation Technology Co:, Ltd:, Shanghai Institute of Materials Co:, Ltd:, Jiangsu Jinyu Intelligent Testing System Co:, Ltd:, Wuhan University, Wuhan University of Technology, Sichuan Yaocheng Non-destructive Testing Technology Co:, Ltd:, Jiangyin Xingcheng Special Steel Co:, Ltd: Division, China Academy of Ordnance Science Ningbo Branch, Luoyang LYC Bearing Co:, Ltd:, Edson (Xiamen) Electronics Co:, Ltd: The main drafters of this document: Wang Zicheng, Jiang Jiansheng, Lin Guanghui, Han Lina, Wang Ping, Wang Xiaokai, Han Zhixiong, Huang Yin, Gui Linlin, Ding Jie, Jin Yaohui, Zhou Youpeng, Du Yuping, Zhang Jun, Liu Yalun, Yuan Gangqiang, Wu Shuoyang, Zhang Rongfan, Chen Cuili, Lin Junming: Non-destructive testing automatic ultrasonic testing System selection and application

1 Scope

GB/Z 43410-2023 guides the choice of an automated ultrasonic testing system. Automating ultrasonic inspection removes the operator's hand from the probe, which removes the variability that has always limited manual UT - coverage that depends on how carefully someone swept, and results that exist only as an operator's report. In exchange it

introduces decisions that manual testing never required: the scanning mechanism and its positional accuracy, the probe configuration and how the beams cover the volume, the data acquisition rate against scanning speed, and the analysis software that will present far more data than anyone can examine. Chosen badly, an automated system produces beautifully recorded evidence of an inspection that did not cover the region where the flaw was. This document provides guidance on the selection and application of automated ultrasonic testing systems, for verifying component geometry, material properties and the correctness of manufacturing processes such as welding. As a GB/Z it is a guiding technical document. Under ICS 19.100 and CCS J04, it is written for NDT service providers and their clients in the pressure equipment, pipeline and fabrication industries, and for the inspection authorities who accept the results.

This document applies to the correctness of the geometry of the component or parts, material properties (quality or defects) and manufacturing processes (e:g: weld inspection) stage of ultrasonic testing: This document provides user guidance for meeting customer requirements, specified testing procedures, standardized documents or rules, including the following:

---Ultrasound probes, probe systems and control transducers;

---Including control operating system;

---Electronic subsystem for transmitting and receiving ultrasound;

---Data storage and display system;

---Systems and methods for evaluating test results: This document describes performance verification procedures for selected detection systems: Detection includes the following 2 types:

---Inspection during product manufacturing process (fixed inspection system), and;

---Inspection using mobile inspection systems:

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, the dated quotations For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to this document:

ISO 5577 Non-destructive testing ultrasonic testing terminology (Non-destructivetesting-Ultrasonictesting-Vocabulary)

GB/T 12604:1-2020 Non-destructive testing terminology Ultrasonic testing (ISO 5577:2017, MOD)

3 Terms and definitions

The terms and definitions defined in ISO 5577 apply to this document:

4 Basic system overview

1 System Automatic ultrasonic inspection systems have the following 2 main applications:

a) Detect and evaluate material defects (such as cracks, pores, geometric features);

b) Measure and evaluate material properties (e:g: sound velocity, scattering): The automatic detection system has the following basic components: