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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 41123.2-2021

Non-destructive testing - Radiation methods for industrial computed tomography - Part 2: Operation and interpretation

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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 of Standardization Documents"

drafted:

This document is part 2 of GB/T 41123 "Industrial Radiography Computed Tomography for Nondestructive Testing": GB/T 41123 has

The following sections have been published:

--- Part 1: Principles, equipment and samples;

--- Part 2: Operation and interpretation;

--- Part 3: Verification:

This document is equivalent to ISO 15708-3:2017 "Non-Destructive Radiographic Computed Tomography Testing - Part 3: Operation and Interpretation":

The following minimal editorial changes have been made to this document:

--- In order to harmonize with existing standards, the name of the standard is changed to "Non-destructive Testing Industrial Ray Computed Tomography Testing Part 2:

Operation and Interpretation";

--- Added the explanation (5:1:2) of the meaning of the letter symbols of formula (3);

--- Revised the year of the cited document that was used incorrectly (Note 5:1:4, References);

--- Modify the symbol (5:1:2) that uses the wrong formula (4);

--- Modified the use of the wrong formula (A:1) symbols (Appendix A):

Please note that some content of this document may be patented: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

Industrial ray computed tomography detection (referred to as industrial CT) is obtained by ray projection measurement of objects at different angles:

The imaging technology of object cross-section information involves many disciplines such as radiation physics, mathematics, computer science, graphic imaging and mechanics:

Industrial CT has the advantages of not being limited by the type of material, composition, surface condition, etc: of the detected object, and can give the composition, density,

The tomographic images corresponding to the geometric structure and size characteristics have the characteristics of intuitive imaging, high spatial and density resolution, and have been widely used in aviation:

It is used in the fields of aerospace, aviation, weapons, metallurgy, machinery, automobile manufacturing, high-speed rail, electronics, geology, biology, archaeology, etc:

Degree characterization, assembly structure analysis, reverse engineering and other occasions:

In order to standardize the inspection work of industrial CT and be in line with international standards, on the basis of summarizing the experience of industrial CT research and application over the years, the

ISO 15708 (a total of four parts) is converted into my country's standard documents, of which ISO 15708-1 is modified and converted into GB/T 12604:12 "No

NDT Terminology Part 12: Industrial X-ray Computed Tomography Inspection, included in the standard system of NDT terminology in my country:

ISO 15708-2~ISO 15708-4 are equivalently converted into GB/T 41123 series of documents: GB/T 41123 is divided into 3 parts:

--- GB/T 41123:1 Non-destructive testing of industrial ray computed tomography testing - Part 1: Principles, equipment and samples;

--- GB/T 41123:2 Non-destructive testing of industrial ray computed tomography testing - Part 2: Operation and interpretation;

--- GB/T 41123:3 Non-destructive testing of industrial ray computed tomography testing - Part 3: Verification:

GB/T 41123 specifies the principles, equipment and samples, operation and interpretation, verification, etc: of industrial CT:

The quality control requirements are put forward, which is conducive to promoting the development, communication and cooperation of industrial CT technology, and is of great importance to the application of industrial CT in various industries:

To guide meaning:

This document is part 2 of GB/T 41123, which specifies the operation and interpretation of results of industrial radiography computed tomography systems:

Provide relevant technical information for testing personnel, so as to select appropriate parameters in the testing process, and conduct reasonable analysis and analysis of testing results:

assessment:

Nondestructive Testing Industrial Radiography Computed Tomography Testing

Part 2: Operation and Interpretation

1 Scope

This document specifies the operation and interpretation of results of an industrial radiographic computed tomography (CT) system: The purpose of this document is to provide inspectors with relevant information

Technical information to select the appropriate parameters during the detection process:

This document is suitable for industrial X-ray computed tomography (non-medical applications) detection, and gives a unified set of CT performance parameter definitions,

and the relationship between these performance parameters and the technical specifications of the CT system:

This document applies to computed axial tomography and does not apply to other types of slices such as translational scan tomography and tomosynthesis

Analysis image:

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to

this document:

ISO 15708-1:2017 Non-destructive testing - Radio-computed tomography testing - Part 1: Terminology (Non-destructivetes-

ting-Radiationmethodsforcomputedtomography-Part 1:Terminology)

Note: GB/T 12604:12-2021 Non-destructive testing terminology Part 12: Industrial ray computed tomography testing (ISO 15708-1:2017,

MOD)

ISO 15708-2:2017 Non-destructive testing - Radiographic computed tomography testing - Part 2: Principles, equipment and samples (Non-

destructivetesting-Radiationmethodsforcomputedtomography-Part 2:Principles,equipmentand

samples)

Note: GB/T 41123:1 Nondestructive Testing Industrial Radiography Computed Tomography Testing Part 1: Principles, Equipment and Samples (ISO 15708-2:2017,

IDT)

3 Terms and Definitions

Terms and definitions defined in ISO 15708-1 and the following apply to this document:

The web addresses of terminology databases used in standardization work maintained by ISO and IEC are as follows:

---IEC Electrotechnical Encyclopedia: http://www:electropedia:org/;

---ISO online browsing platform: https://www:iso:org/obp:

4 Operating procedures

4:1 Overview

Before the inspection, the computer tomography (CT) inspection target should be defined, and the inspection task should be determined according to the size and type of the inspected feature/defect:

services, for example, specifying appropriate acceptance levels and geometric deviations: The specific processing steps of CT application are introduced as follows, and its implementation is given:

information: