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Automated ultrasonic examination of steel pipes and tubes

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry based on the provision of Article 14, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act in response to a proposal for revision of Japanese Industrial Standard with a draft being attached, submitted by The Japan Iron and Steel Federation (JISF), an accredited standards development organization. This edition replaces the previous edition (**JIS G 0582** : 2015), which has been technically revised.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, published patent application or utility model rights. The relevant Minister is not responsible for identifying any of such patent rights, published patent application or utility model rights.

Automated ultrasonic examination of steel pipes and tubes

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 10893-10** : 2011 (Edition 1) and its Amendment 1 : 2020, **ISO 10893-11** : 2011 (Edition 1) and its Amendment 1 : 2020, and **ISO 10332** : 2010 (Edition 2) with some modifications of the technical contents.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standards. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the automated angle beam ultrasonic examination (including the method using phased array probe) of longitudinal imperfections of seamless steel tubes and longitudinal imperfections of the welds of welded steel tubes (excluding submerged arc-welded tubes). It is normally applicable to steel tubes with an outside diameter equal to or greater than 10 mm.

If so specified by the product standard or agreed between the purchaser and the manufacturer, the method may be applied for inspection of transverse imperfections on seamless steel tubes, and longitudinal imperfections on the parent material of welded steel tubes.

NOTE 1 This Standard is normally applied to steel tubes with a ratio of the wall thickness to the outside diameter equal to or smaller than 20 %.

NOTE 2 **ISO 10332**, **ISO 10893-10** and **ISO 10893-11** permit the use of the Lamb wave technique for inspection of longitudinal imperfections.

NOTE 3 The International Standards corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 10332 : 2010 *Non-destructive testing of steel tubes — Automated ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for verification of hydraulic leak-tightness*

ISO 10893-10 : 2011 *Non-destructive testing of steel tubes — Part 10 : Automated full peripheral ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of longitudinal and/or transverse imperfections* + Amendment 1 : 2020

ISO 10893-11 : 2011 *Non-destructive testing of steel tubes — Part 11 : Automated ultrasonic testing of the weld seam of welded steel tubes for the detection of longitudinal and/or transverse imperfections* + Amendment 1 : 2020 (Overall evaluation : MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and **JIS** are IDT

(identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21-1.

2 Normative references

Part or all of the provisions of the following standards, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS G 0203 *Glossary of terms used in iron and steel (Products and quality)*

JIS G 0431 *Steel products — Employer's qualification system for non-destructive testing (NDT) personnel*

JIS Z 2300 *Terms and definitions of nondestructive testing*

JIS Z 2305 *Non-destructive testing — Qualification and certification of NDT personnel*

JIS Z 2350 *Method for measurement of performance characteristics of ultrasonic probes*

JIS Z 2352 *Method for evaluating performance characteristics of ultrasonic pulse-echo testing systems*

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions, and those given in JIS G 0203, JIS G 0431 and JIS Z 2300 apply.

3.1

reference standard

artificially imparted defects for calibration of non-destructive testing equipment, used for setting the trigger/alarm level and checking sensitivity of the equipment

Note 1 to entry For example, drill holes, square notches and V notches.

3.2

reference sample

sample tube or segment thereof which contains the reference standard(s)

Note 1 to entry Only the term "reference tube" is used in ISO 10332, ISO 10893-10 and ISO 10893-11, also covering the term "reference sample".

3.3

manufacturer

organization that manufactures products in accordance with the relevant standard(s) and declares the compliance of the delivered products with all applicable provisions of the relevant standard(s)

3.4