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**Automated full peripheral ultrasonic
thickness examination of steel pipes and
tubes**

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Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by Japan Iron and Steel Federation (JISF) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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Automated full peripheral ultrasonic thickness examination of steel pipes and tubes

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of **ISO 10893-12** published in 2011 with some modifications of the technical contents.

The portions with dotted underlines are the matters not given in the corresponding International Standard. A list of modifications with explanations is given in Annex JA.

1 Scope

This Standard specifies requirements for the automated full peripheral ultrasonic testing of seamless and welded steel tubes, with the exception of submerged arc-welded tubes, for wall thickness measurement.

This Standard is applicable to the thickness measurement of tubes with a specified outside diameter equal to or greater than 25.4 mm and a minimum wall thickness of 2.6 mm, unless otherwise agreed on.

NOTE 1 Full peripheral testing does not necessarily mean that 100 % of the tube surface area ratio is scanned (see 5.2).

NOTE 2 The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 10893-12 : 2011 *Non-destructive testing of steel tubes — Part 12 : Automated full peripheral ultrasonic thickness testing of seamless and welded (except submerged arc-welded) steel tubes* (MOD)

The symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, 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*

NOTE : Corresponding International Standard : **ISO/FDIS 11484.2** : 2008 *Steel products — Employer's qualification system for non-destructive testing (NDT) personnel* (MOD)

JIS Z 2300 Terms and definitions of nondestructive testing

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

NOTE : Corresponding International Standard : ISO 9712 : 1999 *Non-destructive testing — Qualification and certification of personnel* (MOD)

3 Terms and definitions

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

3.1 reference sample

steel tube, or a segment of steel tube or of steel plate having a known area of predetermined thickness, which is used for calibration or precision checking of equipment

3.2 manufacturer

organization that manufactures products in accordance with the relevant standards and declares the compliance of the delivered products with all applicable provisions of the relevant standards

4 General requirements

4.1 Inspection term

Unless otherwise specified by the product standard or agreed between the purchaser and the manufacturer, an ultrasonic test shall be carried out on tubes after completion of all the primary production process operations (e.g. hot and cold working, heat treating, etc. that may affect the ultrasonic properties or shape of steel tube).

4.2 Properties of steel

The tubes under test shall be sufficiently straight to ensure the validity of the test. The surfaces shall be free of foreign matter, which can interfere with the validity of the test.

4.3 Technical expert of inspection

This test shall be carried out by suitably trained operators, qualified in accordance with **JIS G 0431**, **JIS Z 2305** or equivalent and supervised by competent personnel nominated by the manufacturer.

The operating authorization issued by the employer shall be according to a written procedure. Non-destructive testing (NDT) operations should be authorized by an NDT technical expert approved by the employer. The NDT technical expert for authorizing the non-destructive testing should have a level 3 qualification.

NOTE : The definition of levels 1, 2 and 3 can be found in **JIS G 0431** and **JIS Z 2305**.