



NSAI
Standards

Irish Standard
I.S. EN ISO 13588:2012

Non-destructive testing of welds - Ultrasonic testing - Use of automated phased array technology (ISO 13588:2012)

© CEN 2012

No copying without NSAI permission except as permitted by copyright law.

I.S. EN ISO 13588:2012

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

<i>This document replaces:</i>	<i>This document is based on:</i> EN ISO 13588:2012	<i>Published:</i> 22 October, 2012
This document was published under the authority of the NSAI and comes into effect on: 22 October, 2012		ICS number: 25.160.40
NSAI 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie W NSAI.ie	Sales: T +353 1 857 6730 F +353 1 857 6729 W standards.ie
Údarás um Chaighdeáin Náisiúnta na hÉireann		

ICS 25.160.40

English Version

Non-destructive testing of welds - Ultrasonic testing - Use of automated phased array technology (ISO 13588:2012)

Contrôle non destructif des assemblages soudés - Contrôle par ultrasons - Utilisation de la technique multi-éléments automatisés (ISO 13588:2012)

Zerstörungsfreie Prüfung von Schweißverbindungen - Ultraschallprüfung - Verwendung von (halb-)automatisierter phasengesteuerter Array-Technologie (ISO 13588:2012)

This European Standard was approved by CEN on 30 September 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....3

Foreword

This document (EN ISO 13588:2012) has been prepared by Technical Committee CEN/TC 121 "Welding", the secretariat of which is held by DIN, in collaboration with Technical Committee ISO/TC 44 "Welding and allied processes".

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

This page is intentionally left BLANK.

I.S. EN ISO 13588:2012
INTERNATIONAL
STANDARD

ISO
13588

First edition
2012-10-01

**Non-destructive testing of welds —
Ultrasonic testing — Use of automated
phased array technology**

*Contrôle non destructif des assemblages soudés — Contrôle par
ultrasons — Utilisation de la technique multi-éléments automatisés*



Reference number
ISO 13588:2012(E)

© ISO 2012



COPYRIGHT PROTECTED DOCUMENT

© ISO 2012

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Testing levels	2
5 Information required prior to testing	4
5.1 Items to be defined prior to procedure development	4
5.2 Specific information required by the operator before testing	4
5.3 Written test procedure	4
6 Requirements for personnel and equipment	5
6.1 Personnel qualifications	5
6.2 Equipment	5
7 Preparation for testing	5
7.1 Volume to be inspected	5
7.2 Verification of test set-up	6
7.3 Scan increment setting	6
7.4 Geometry considerations	6
7.5 Preparation of scanning surfaces	6
7.6 Temperature	6
7.7 Couplant	6
8 Testing of base material	7
9 Range and sensitivity settings	7
9.1 Settings	7
9.2 Checking of the settings	8
9.3 Reference blocks	8
10 Equipment checks	9
11 Procedure qualification	9
12 Weld testing	9
13 Data storage	10
14 Interpretation and analysis of phased array data	10
14.1 General	10
14.2 Assessing the quality of the phased array data	10
14.3 Identification of relevant indications	10
14.4 Classification of relevant indications	10
14.5 Determination of location and length of an indication	11
14.6 Indication assessment	11
14.7 Evaluation against acceptance criteria	11
15 Test report	11
Annex A (informative) Typical reference blocks and reference reflectors	13
Bibliography	17

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13588 was prepared by the European Committee for Standardization (CEN) in collaboration with ISO Technical Committee TC 44, *Welding and allied processes*, Subcommittee SC 5, *Testing and inspection of welds*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

Requests for official interpretations of any aspect of this International Standard should be directed to the Secretariat of ISO/TC 44/SC 5 via your national standards body. A complete listing of these bodies can be found at www.iso.org.

Non-destructive testing of welds — Ultrasonic testing — Use of automated phased array technology

1 Scope

This International Standard specifies the application of the phased array technology for the semi- or fully automated ultrasonic testing of fusion-welded joints in metallic materials of minimum thickness 6 mm. It applies to full penetration welded joints of simple geometry in plates, pipes, and vessels, where both the weld and parent material are low-alloyed carbon steel.

Where material-dependent ultrasonic parameters are specified in this International Standard, they are based on steels having an ultrasonic sound velocity of $(5\,920 \pm 50)$ m/s for longitudinal waves, and $(3\,255 \pm 30)$ m/s for transverse waves. It is necessary to take this fact into account when examining materials with a different velocity.

This International Standard provides guidance on the specific capabilities and limitations of phased array technology for the detection, location, sizing and characterization of discontinuities in fusion-welded joints. Phased array technology can be used as a stand-alone technology or in combination with other non-destructive testing (NDT) methods or techniques, for manufacturing inspection, pre-service and for in-service inspection.

This International Standard specifies four testing levels, each corresponding to a different probability of detection of imperfections.

This International Standard permits assessment of indications for acceptance purposes based on either amplitude (equivalent reflector size) and length or height and length.

This International Standard does not include acceptance levels for discontinuities.

This International Standard is not applicable:

- for coarse-grained metals and austenitic welds;
- for automated testing of welds during the production of steel products covered by ISO 10893-8,^[3] ISO 10893-11,^[4] and ISO 3183.^[1]

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO 10863, *Non-destructive testing of welds — Ultrasonic testing — Use of time-of-flight diffraction technique (TOFD)*

ISO 17635, *Non-destructive testing of welds — General rules for metallic materials*

ISO 17640, *Non-destructive testing of welds — Ultrasonic testing — Techniques, testing levels, and assessment*

EN 473, *Non-destructive testing — Qualification and certification of NDT personnel — General principles*

EN 1330-4, *Non-destructive testing — Terminology — Part 4: Terms used in ultrasonic testing*

EN 16392-1, *Non-destructive testing — Characterization and verification of ultrasonic phased array systems — Part 1: Instruments*

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-