ISO 13588:2019 (E)

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

Contents

Foreword

1 Scope

2 Normative references

3 Terms and definitions

4 Testing levels

5 Information required prior to testing

5.1 Items to be defined prior to procedure development
5.2 Specific information required by the operator before testing
5.3 Written test procedure

6 Requirements for personnel and test equipment

6.1 Personnel qualifications
6.2 Test equipment
6.2.1 General
6.2.2 Ultrasonic instrument
6.2.3 Ultrasonic probes
6.2.4 Scanning mechanisms

7 Preparation for testing

7.1 Volume to be tested
7.2 Verification of the test setup
7.3 Scan increment setting
7.4 Geometry considerations
7.5 Preparation of scanning surfaces
7.6 Temperature
7.7 Couplant

8 Testing of base material

9 Range and sensitivity settings

9.1 Settings
9.1.1 General
9.1.2 Pulse-echo time window
9.1.3 Pulse-echo sensitivity settings
9.1.3.1 General
9.1.3.2 Focusing
9.1.3.3 Gain corrections
9.1.3.4 Sensitivity settings for different modes of phased array testing
9.1.4 TOFD settings
9.2 Checking of the settings
9.3 Reference blocks
9.3.1 General
9.3.2 Material
9.3.3 Dimensions and shape
9.3.4 Reference reflectors

10 Equipment checks

11 Procedure qualification

12 Weld testing

13 Data storage

14 Interpretation and analysis of phased array data

14.1 General
14.2 Assessing the quality of the phased array data
14.3 Identification of relevant indications
14.4 Classification of relevant indications
14.5 Determination of location
14.6 Determination of length and height
14.6.1 General
14.6.2 Determination of length
14.6.3 Determination of height
14.6.3.1 General
14.6.3.2 Using diffracted signals
14.6.3.3 Using amplitude-based and other signals
14.7 Evaluation against acceptance criteria

15 Test report

Annex A (informative) Typical reference blocks and reference reflectors

A.1 Reference reflectors
A.2 Typical reference blocks
A.2.1 Testing level A (Figure A.1)
A.2.2 Testing level B (Figure A.2)
A.2.3 Testing level C (Figure A.3)
A.2.4 Testing level D

Annex B (informative) Illustrations of possible signals to be used

B.1 2 diffracted signals from the same discontinuity (upper and lower tip)
B.2 Diffracted signal and reflected signal from the same discontinuity

Page count: 24