



Handläggande organ	Fastställt	Utgåva	Sida
SVENSK MATERIAL- & MEKANSTANDARD, SMS	1999-12-03	1	1 (1+8)

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Non-destructive testing – Radioscopic testing – Part 2: Check of long term stability of imaging devices

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Swedish Standards corresponding to documents referred to in this Standard are listed in "Catalogue of Swedish Standards", issued by SIS. The Catalogue lists, with reference number and year of Swedish approval, International and European Standards approved as Swedish Standards as well as other Swedish Standards.

Oförstörande provning – Radioskopi – Del 2: Kontroll av långtidsstabilitet hos avbildningsenheten

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ICS 19.100

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Tryckt i februari 2000

EUROPEAN STANDARD

EN 13068-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 1999

ICS 19.100

English version

Non-destructive testing - Radioscopic testing - Part 2: Check of long term stability of imaging devices

Essais non destructifs - Contrôle par radioscopie - Partie 2:
Contrôle de la stabilité à long terme des systèmes
d'imagerie

Zerstörungsfreie Prüfung - Radioskopische Prüfung - Teil 2:
Prüfung der Langzeitstabilität von bildgebenden Systemen

This European Standard was approved by CEN on 29 October 1999.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 138 "Non-destructive testing", the secretariat of which is held by AFNOR.

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 June 2000, and conflicting national standards shall be withdrawn at the latest by June 2000.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

EN 13068 comprises a series of European Standards of radioscopic systems which is made up the following:

EN 13068-1:1999, *Non-destructive testing - Radioscopic testing - Part 1: Quantitative measurement of imaging properties.*

EN 13068-2:1999, *Non-destructive testing - Radioscopic testing - Part 2: Check of long term stability of imaging devices.*

prEN 13068-3, *Non-destructive testing - Radioscopic testing - Part 3: General principles of radioscopic testing of metallic materials by X- and gamma rays.*

Introduction

This part of the European Standard gives an outline for the quality control of the imaging devices during operation. Reference is made to part one which deals with the quantitative measurements. A further part 3 and others will be related to special applications, e. g. weld inspection, casting inspection, etc.

Before operation of a new radioscopic system, a quality control procedure should be specified by the producer and the user of the system which ensures the stable and reliable performance of the radioscopic system. This procedure should include the parts of this standard, specify the region of interest (ROI) on the display unit, placement of test IQIs and other relevant parameters for good reproducibility of the tests.

Additionally, the frequency of tests and acceptance levels for system degradation should be specified according to the requirements of NDT specifications and usage of the system.

1 Scope

This part of the standard gives guidance on the on site check of equipment for radioscopy where the image is presented on a display unit including image processing. The radiation sources used can be X-rays or gamma rays.

This standard establishes rules for testing a radioscopic system to assure a constant level of inspection quality. The tests should be easily performable by the operators of the system. They are based on an input signal from defined image quality indicators. The measurement of the systems response should be performed with the same equipment which is in use in this particular installation.

This standard is applicable to installations with an image processing computer as well as to simple display units.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 13068-1:1999, *Non-destructive testing - Radioscopic examination - Part 1: Quantitative measurement of imaging properties.*

EN 462-1, *Non-destructive testing - Image quality of radiographs - Part 1: Image quality indicators (wire type) - Determination of image quality value.*

EN 462-2, *Non-destructive testing - Image quality of radiographs - Part 2: Image quality indicators (step/hole type) - Determination of image quality value.*

EN 462-5, *Non-destructive testing - Image quality of radiographs - Part 5: Image quality indicators (duplex wire type), determination of image unsharpness value.*

3 Comparison with natural defects

Tests with natural defects are not sufficient as the only quality control for the comparison of the actual system performance with the first day appearance.

The performance of the radioscopic system should be tested to its ability to image and recognize the typical and the critical defects of a certain component. In addition to standardized IQIs, samples with smallest or most difficult to detect natural defects can be used for a routine quality control of the overall system performance.

4 Image quality control by image quality indicators (IQIs)

4.1 General

The quality of a radioscopic image is essentially determined by sharpness, contrast and linearity.

These parameters which have been described in EN 13068-1:1999 depend on the set-up of source, imaging system and specimen. For the purpose of quality control they shall be supervised by checking the overall performance of the radioscopic set-up on a routine basis during operation and with the same operational set-up used in usual operation. This can be achieved by means of image quality indicators.

For all specimens the IQI has to be placed at the source side of the specimen if this is possible.