Ikke-destruktiv prøvning – Måling og vurdering af røntgenrørsspænding – Del 1: Spændingsdelermetode

Non-destructive testing – Measurement and evaluation of the X-ray tube voltage – Part 1: Voltage divider method (ISO 16526-1:2011)

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EUROPEAN STANDARD EN ISO 16526-1

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English Version

Non-destructive testing - Measurement and evaluation of the X-ray tube voltage - Part 1: Voltage divider method (ISO 16526-1:2011)

Essais non destructifs - Mesurage et évaluation de la tension des tubes radiogènes - Partie 1: Méthode par diviseur de tension (ISO 16526-1:2011)

Zerstörungsfreie Prüfung - Messung und Auswertung der Röntgenröhrenspannung - Teil 1: Spannungsteiler-Verfahren (ISO 16526-1:2011)

This European Standard was approved by CEN on 6 January 2020.

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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.

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European foreword

The text of ISO 16526-1:2011 has been prepared by Technical Committee ISO/TC 135 "Non-destructive testing" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 16526-1:2020 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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.

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

This document supersedes EN 12544-3:1999, EN 12544-1:1999 and EN 12544-2:2000.

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

Endorsement notice

The text of ISO 16526-1:2011 has been approved by CEN as EN ISO 16526-1:2020 without any modification.

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Non-destructive testing — Measurement and evaluation of the X-ray tube voltage —

Part 1: Voltage divider method

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Partie 1: Méthode par diviseur de tension

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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.

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ISO 16526-1 was prepared by CEN (as EN 12544-1:1999) and is submitted for approval under a special "fast-track procedure", by Technical Committee ISO/TC 135, *Non-destructive testing*, Subcommittee SC 5, *Radiation methods*, in parallel with its approval by the ISO member bodies (see the *ISO/IEC Directives*, Part 1, "Fast-track procedure").

ISO 16526 consists of the following parts, under the general title *Non-destructive testing — Measurement and evaluation of the X-ray tube voltage*:

— Part 1: Voltage divider method

— Part 2: Constancy check by the thick filter method

— Part 3: Spectrometric method

Introduction

In order to cover the different requirements for the measurement of the X-ray tube voltage, three different methods are described in ISO 16526-1 to ISO 16526-3.

The voltage divider method (ISO 16526-1) enables a direct and absolute measurement of the average high voltage of constant potential X-ray systems on the secondary side of the high voltage generator.

The thick filter method (ISO 16526-2) describes a constancy check. This method is recommended for the regular stability check of an X-ray system.

The spectrometric method (ISO 16526-3) is a procedure for non-invasive measurement of the X-ray tube voltage using the energy spectrum of the X-rays. This method can be applied for all X-ray systems and is the recommended method whenever the voltage divider method is not applicable, e. g. in case of tank units where it is not possible to connect the voltage divider device.

Non-destructive testing — Measurement and evaluation of the X-ray tube voltage —

Part 1:
Voltage divider method

1 Scope

This part of ISO 16526 specifies a method for the direct and absolute measurement of the average high voltage of constant potential (DC) X-ray systems on the secondary side of the high voltage generator. The intention is to check the correspondence with the indicated high voltage value on the control unit of the X-ray system.

This method is applied to assure a reproducible operation of X-ray systems because the voltage influences particularly the penetration of materials and the contrast of X-ray images and also the requirements concerning the radiation protection.