Non-destructive testing - Measurement and evaluation of the X-ray tube voltage - Part 2: Constancy check by the thick filter method (ISO 16526-2:2011)

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NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 16526-2:2020 sisaldab Euroopa standardi EN ISO 16526-2:2020 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 16526-2:2020 consists of the English text of the European standard EN ISO 16526-2:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 04.03.2020.	Date of Availability of the European standard is 04.03.2020.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Non-destructive testing - Measurement and evaluation of the X-ray tube voltage - Part 2: Constancy check by the thick filter method (ISO 16526-2:2011)

Essais non destructifs - Mesurage et évaluation de la tension des tubes radiogènes - Partie 2: Contrôle de la constance selon la méthode du filtre épais (ISO 16526-2:2011)

Zerstörungsfreie Prüfung - Messung und Auswertung der Röntgenröhrenspannung - Teil 2: Konstanzprüfung mit dem Dickfilter-Verfahren (ISO 16526-2:2011)

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

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

The text of ISO 16526-2:2011 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 16526-2:2020 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of an identical text or by endorsement, at the latest by September 2020, and conflicting national standards shall be withdrawn at the latest by September 2020.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 12544-2:2000.

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Endorsement notice

The text of ISO 16526-2:2011 has been approved by CEN as EN ISO 16526-2:2020 without any modification.

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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 shall be applied 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 2: Constancy check by the thick filter method

1 Scope

This part of ISO 16526 specifies a constancy check of a X-ray system where mainly the X-ray voltage is checked and also the tube current and the constitution of the target which can be changing due to ageing of the tube.

The thick filter method is based on a measurement of the dose rate behind a defined thick filter using defined distances between the X-ray tube, the filter and the measuring device.

This method is very sensitive to changes of the voltage, but it does not provide an absolute value for the X-ray tube voltage. Therefore, a reference value is needed and, it is recommended to find this reference, for example, within the acceptance test of the system.

The thick filter method is a rather simple technique and may be applied by the operator of an X-ray system to perform regularly a constancy check of the system.

The method can also be applied for consistency checks after changing components which may affect the X-ray tube voltage.

This method can be applied for all types of X-ray systems, i. e. for constant potential, half wave and impulse wave generators with a tube current larger than 1 mA.

2 Principle and equipment

The equipment to be used includes the following components, see figure 1:

– the X-ray system;

– a specified collimator;

– a specified filter;

– suitable dose meter or dose rate meter;

– a film for the prove of good collimation and dose meter or dose rate meter adjustment.