SLOVENSKI STANDARD

SIST EN 60761-2:2005

julij 2005

Oprema za neprekinjeno spremljanje in nadzor radioaktivnosti v plinastih izpuhih – 2. del: Posebne zahteve za monitorje za aerosole, vključno s transurani

Equipment for continuous monitoring radioactivity in gaseous effluents – Part 2: Specific requirements for aerosols monitors including transuranic aerosols

ICS 13.280; 17.240

Referenčna številka
SIST EN 60761-2:2005(en)

EUROPEAN STANDARD **EN 60761-2**

NORME EUROPÉENNE

EUROPÄISCHE NORM December 2004

ICS 13.280

English version

Equipment for continuous monitoring radioactivity in gaseous effluents Part 2: Specific requirements for aerosols monitors including transuranic aerosols

(IEC 60761-2:2002, modified)

Equipements de surveillance en continu de la radioactivité dans les effluents gazeux Partie 2: Exigences particulières aux moniteurs d'aérosols radioactifs, y compris les aérosols transuraniens (CEI 60761-2:2002, modifiée)

Einrichtungen zur kontinuierlichen Überwachung von Radioaktivität in gasförmigen Ableitungen Teil 2: Besondere Anforderungen an Monitore für radioaktive Aerosole einschließlich Transuranaerosole (IEC 60761-2:2002, modifiziert)

This European Standard was approved by CENELEC on 2004-11-01. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

CENELEC
European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Ref. No. EN 60761-2:2004 E

Foreword

The text of the International Standard IEC 60761-2:2002, prepared by SC 45B, Radiation protection instrumentation, of IEC TC 45, Nuclear instrumentation, together with the common modifications prepared by the CENELEC BTTF 111-3 Instrumentation for ionizing radiation measurement and protection, was submitted to the formal vote and was approved by CENELEC as EN 60761-2 on 2004-11-01.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2005-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2007-11-01

Annex ZA has been added by CENELEC.

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Endorsement notice

The text of the International Standard IEC 60761-2:2002 was approved by CENELEC as a European Standard with agreed common modifications as given below.

COMMON MODIFICATIONS

5 Sampling and detection assembly

5.1 **Replace** the title by:

5.1 Air delivery system including the pump

5.3 Particle collection efficiency

Add the following note:

NOTE Accuracy and sensitivity of the measurement depends on the collection efficiency of the filter material as well as on the free passing of the components not to be retained. If the gas flow rate is 10 % lower than its nominal value, the collecting media is to be replaced by a new one.

13 Radiation performance tests

Delete the second paragraph.

13.1 Dynamic tests

Add the following as a first paragraph:

These tests shall be undertaken under standard test conditions and shall be carried out with air (or gas) flow rate.

13.7 Variation of the detection efficiency as a function of alpha radiation energy (alpha monitors)

Replace by:

13.7 Variation of the detection efficiency as a function of alpha radiation energy (alpha monitors)

Tests of detection efficiency variation with alpha energy are not required.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

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.

NOTE Where an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
-	-	Limits and methods of measurement of radio disturbance characteristics of information technology equipment	EN 55022	1994 [1)]
IEC 60068-2-27	1987	Basic environmental testing procedures Part 2: Tests - Test Ea and guidance: Shock	EN 60068-2-27	1993
IEC 60761-1 (mod)	2002	Equipment for continuous monitoring radioactivity in gaseous effluents Part 1: General requirements	EN 60761-1	2004
IEC 61000	Series	Electromagnetic compatibility (EMC)	EN 61000	Series
IEC 61578	1997	Radiation protection instrumentation - Calibration and verification of the effectiveness of radon compensation for alpha and or/beta aerosol measuring instruments - Test methods	-	-
EN 481	1993	Workplace atmospheres - Size fraction definitions for measurement of airborne particles	-	-

1) EN 55022:1994 is superseded by EN 55022:1998.

NORME INTERNATIONALE

INTERNATIONAL STANDARD

CEI
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Deuxième édition
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2002-01

Equipements de surveillance en continu de la radioactivité dans les effluents gazeux –

Partie 2: Exigences particulières aux moniteurs d'aérosols radioactifs, y compris les aérosols transuraniens

Equipment for continuous monitoring of radioactivity in gaseous effluents –

Part 2: Specific requirements for radioactive aerosol monitors including transuranic aerosols

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

EQUIPMENT FOR CONTINUOUS MONITORING OF RADIOACTIVITY IN GASEOUS EFFLUENTS –

Part 2: Specific requirements for radioactive aerosol monitors including transuranic aerosols

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of the IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested National Committees.
3) The documents produced have the form of recommendations for international use and are published in the form of standards, technical specifications, technical reports or guides and they are accepted by the National Committees in that sense.
4) In order to promote international unification, IEC National Committees undertake to apply IEC International. Standards transparently to the maximum extend possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.
5) The IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with one of its standards.
6) Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. The IEC shall not be held responsible for identifying any or all such patent rights.

International standard IEC 60761-2 has been prepared by subcommittee 45B: Radiation protection instrumentation, of IEC technical committee 45: Nuclear instrumentation.

This standard shall be read in conjunction with IEC 60761-1 (2002).

This second edition cancels and replaces the first edition of IEC 60761-2, published in 1983, and the first edition of IEC 60761-6, published in 1991, of which it constitutes a technical revision.

The text of this standard is based on the first edition, and the following documents:

FDIS	Report on voting
45B/334/FDIS	45B/345/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

Annex A is for information only.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

IEC 60761 consists of the following parts, under the general title: *Equipment for continuous monitoring of radioactivity in gaseous effluents.*

Part 1: General requirements

Part 2: Specific requirements for radioactive aerosol monitors including transuranic aerosols

Part 3: Specific requirements for radioactive noble gas monitors

Part 4: Specific requirements for radioactive iodine monitors

Part 5: Specific requirements for tritium monitors

EQUIPMENT FOR CONTINUOUS MONITORING OF RADIOACTIVITY IN GASEOUS EFFLUENTS –

Part 2: Specific requirements for radioactive aerosol monitors including transuranic aerosols

1 Scope and object

This part of IEC 60761 is applicable to equipment intended for simultaneous, delayed or discrete sequential measurement of aerosols in gaseous effluents discharged into the environment.

It is applicable to equipment designed to fulfill the following functions:

– the measurement of the volumic activity (Bq/m^3) of the aerosols in gaseous effluents and/or the released total activity of aerosols (Bq);

– the actuation of an alarm signal when either a predetermined volumic activity or a predetermined total released activity of aerosols is exceeded.

This equipment is intended for measurement over a wide range of activity, including very small quantities in the presence of a much larger natural background. The daughters of ^{222}Rn (radon) and ^{220}Rn (thoron) are naturally occurring aerosols contributing to the natural background. The discrimination against natural activity can be an important problem in monitoring low level activity. In order to provide more and better information, complementary or retrospective laboratory analysis of the filters after collection may be performed.

The object of this standard is to establish specific standard requirements, including technical characteristics and general test conditions, and to give examples of acceptable methods for aerosol effluent monitors.

The general requirements, technical characteristics, test procedures, radiation characteristics, electrical, mechanical, safety and environmental characteristics are given in IEC 60761-1. Unless otherwise stated, these requirements apply to this standard.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60761. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 60761 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60068-2-27:1987, *Environmental testing – Part 2: Tests – Test Ea and guidance – Shock*

IEC 60761-1:2002, *Equipment for continuous monitoring of radioactivity in gaseous effluents – Part 1: General requirements*

IEC 61000 (all parts): *Electromagnetic compatibility (EMC)*