

Equipment for continuous monitoring radioactivity in gaseous effluents —

Part 5: Specific requirements for tritium monitors

The European Standard EN 60761-5:2004 has the status of a
British Standard

ICS 13.280

National foreword

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The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by tags **[C]** **[C]**. Where a common modification has been introduced by amendment, the tags carry the number of the amendment. For example, the common modifications introduced by CENELEC amendment A11 are indicated by **[C11]** **[C11]**.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 16, the Annex ZA page and a back cover.

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Equipment for continuous monitoring radioactivity in gaseous effluents
Part 5: Specific requirements for tritium monitors
(IEC 60761-5:2002, modified)

Equipements de surveillance en continu
de la radioactivité
dans les effluents gazeux
Partie 5: Exigences particulières
aux moniteurs de tritium
(CEI 60761-5:2002, modifiée)

Einrichtungen zur kontinuierlichen
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in gasförmigen Ableitungen
Teil 5: Besondere Anforderungen
an Tritiummonitore
(IEC 60761-5:2002, modifiziert)

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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.

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CENELEC

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

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Foreword

The text of the International Standard IEC 60761-5:2002, 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 60761-5 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.

EQUIPMENT FOR CONTINUOUS MONITORING OF RADIOACTIVITY IN GASEOUS EFFLUENTS –

Part 5: Specific requirements for tritium monitors

1 Scope and object

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

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

- the measurement of the concentration of tritium in the gaseous effluents at the discharge point and its variation with time;
- the actuation of an alarm when a predetermined volumic activity or a predetermined total released radioactivity is exceeded.

The equipment may also be used for the determination of the tritium activity discharge over a given period.

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 the tritium effluent monitors defined in clause 4.

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 in 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)*

EN 55022:1994, *Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment*

3 Terms and definitions

For the purpose of this part of IEC 60761, the following definitions apply:

3.1

tritium effluent monitor

equipment designed for the continuous monitoring of tritium in gaseous effluents discharged to the environment

3.2

tritium

unless otherwise stated, "tritium", in this standard, covers tritium in gaseous or vapour forms, whether chemically combined or not

4 Classification of tritium effluent monitors

The equipment may be classified according to the type of measurement as:

- selective monitors, for the selective measurement of one particular form of tritium (gas, tritium oxide or any tritiated compound);
- non-selective monitors, for the overall measurement of tritium in all its forms.

5 Sampling and detection assembly

5.1 Sampling and exhaust pipes

In addition to the general requirements of IEC 60761-1, the following characteristics shall be considered and shall be agreed between manufacturer and purchaser:

- the nature of the materials used, paying particular attention to chemical corrosion, electrostatic effects, memory effects, etc.;
- the minimum distance between inlet and outlet to avoid recirculation;
- the prevention of condensation in the pipe by variation of temperature or pressure;
- the ease of decontamination.

5.2 Inlet filter

A filter shall be placed in a filter-holder at the sampling circuit inlet to remove any dust and aerosols from the air. In order to maintain the specified performance of the equipment, such a filter shall not trap, or even temporarily, retain tritium.

All necessary arrangements shall be made to control the pressure drop in the filter. The system should be designed to allow filter change at a given pressure drop to ensure that an intact filter is in place.

5.3 Ease of decontamination

In order to avoid interference with measurements, it is recommended that all necessary arrangements be made to limit the contamination of the detector. In all cases, the detection assembly shall be easy to dismantle, decontaminate and reassemble.