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Air quality - Assessment of air quality monitoring equipment - Part 4: Performance criteria and test procedures for portable automated measuring systems for periodic measurements of emissions from stationary sources

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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English Version

**Air quality - Assessment of air quality monitoring
equipment - Part 4: Performance criteria and test
procedures for portable automated measuring systems for
periodic measurements of emissions from stationary
sources**

Qualité de l'air - Évaluation des équipements de surveillance de la qualité de l'air - Partie 4 : Critères de performance et modes opératoires d'essai des systèmes de mesurage automatisés portables pour le mesurage périodique des émissions de sources fixes

Luftbeschaffenheit - Beurteilung von Einrichtungen zur Überwachung der Luftbeschaffenheit - Teil 4: Mindestanforderungen und Prüfprozeduren für portable automatische Messeinrichtungen für wiederkehrende Messungen von Emissionen aus stationären Quellen

This European Standard was approved by CEN on 27 November 2023.

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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 COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 15267-4:2023) has been prepared by Technical Committee CEN/TC 264 “Air quality”, the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by June 2024, and conflicting national standards shall be withdrawn at the latest by June 2024.

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 15267-4:2017.

The main changes compared to the previous edition are listed below:

- a) The title of the revised EN 15267 series has been clarified to avoid the impression that all parts deal with the certification of automated measuring systems. The title has been generalized so that specifically Part 1 and Part 2 are also applicable to other air quality monitoring equipment.
- b) The title of revised EN 15267-4 has been clarified to make it clear that Part 4 deals with portable automated measuring systems for periodic measurements of emissions from stationary sources.
- c) The performance criteria and test procedures were adapted to the state of the art in measurement technology.
- d) Requirements for portable automated measuring systems measuring mercury have been added.
- e) References have been updated.

This document is Part 4 of a series of European Standards:

- EN 15267-1, *Air quality — Assessment of air quality monitoring equipment — Part 1: General principles of certification*
- EN 15267-2, *Air quality — Assessment of air quality monitoring equipment — Part 2: Initial assessment of the manufacturer’s quality management system and post certification surveillance for the manufacturing process*
- EN 15267-3, *Air quality — Assessment of air quality monitoring equipment — Part 3: Performance criteria and test procedures for stationary automated measuring systems for continuous monitoring of emissions from stationary sources*
- EN 15267-4, *Air quality — Assessment of air quality monitoring equipment — Part 4: Performance criteria and test procedures for portable automated measuring systems for periodic measurements of emissions from stationary sources*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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

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Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

0.1 General

The assessment of air quality monitoring equipment (AQME) supports the requirements of certain Directives of the European Union (EU), which require, either directly or indirectly, that this equipment complies with performance criteria, maximum permissible measurement uncertainties and test requirements. These Directives include the Directive 2010/75/EU on industrial emissions (IED), Directive (EU) 2015/2193 on medium combustion plants and the Directive 2008/50/EC on ambient air quality and cleaner air for Europe.

The assessment of AQME consists of the following sequential stages:

- a) performance testing;
- b) initial assessment of the manufacturer's quality management system (QMS);
- c) certification;
- d) surveillance for the manufacturing process.

This document specifies the performance criteria and test procedures for performance testing of portable automated measuring systems (P-AMS) used for periodic measurements of stationary source emissions. Testing applies to complete measuring systems.

NOTE 1 Portable electrical apparatus designed to measure combustion flue gas parameters of heating appliances are specified in EN 50379-1 to EN 50379-3.

The application of P-AMS for periodic measurements of stationary source emissions is based on:

- specification of the standard reference method (SRM) and validation of the SRM;
- specification of the alternative method (AM) if the P-AMS is based on an AM;
- certification of the P-AMS in accordance with EN 15267-1, EN 15267-2 and EN 15267-4 including demonstration of equivalence with the SRM in the field if the P-AMS is based on an AM;
- on-going quality management by the user of the P-AMS in line with EN ISO/IEC 17025.

NOTE 2 Examples for SRM and RM for different measured components are listed in Annex A.

The overall assessment for the purposes of certification is *conformity testing*, while the evaluation of performance against specified performance criteria is *performance testing*.

0.2 Legal drivers

This document supports at least the requirements of the following EU Directives:

- Directive 2010/75/EU on industrial emissions;
- Directive (EU) 2015/2193 on the limitation of emissions of certain pollutants into the air from medium combustion plants;
- Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading.

However, this document can also be applied to the monitoring requirements specified in other EU Directives.

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0.3 Periodic measurements

Certified P-AMS can be used as SRM or AM for periodic measurements of stationary source emissions.

0.4 Relationship to EN 14181

Certified P-AMS can be used as SRM or AM for the calibration and validation of stationary AMS for QAL2 and AST purposes.

0.5 Processes

Field testing of P-AMS is ordinarily carried out on industrial processes representative of the range of application of the SRM or AM. The premise is that if the P-AMS performs acceptably on these processes, then experience has shown that the P-AMS generally performs well on the majority of other processes. However, there are always exceptions and it is the responsibility of the user to ensure that the P-AMS performs adequately on a specific process.

The necessary field test of P-AMS is specified in this document.

0.6 Performance characteristics

A combination of laboratory test and field test is detailed within this document. The laboratory test is designed to assess whether P-AMS can meet, under controlled conditions, the relevant performance criteria. The field test is designed to assess whether P-AMS can continue to work and meet the relevant performance criteria in real applications including transportation to the measurement site, set-up of the P-AMS and measurement.

The main P-AMS performance characteristics are:

- response time;
- repeatability standard deviation;
- lack of fit (linearity);
- short-term drift;
- influence of ambient temperature;
- influence of supply voltage variations;
- influence of vibration;
- influence of sample gas pressure;
- influence of sample gas flow for extractive P-AMS;
- cross-sensitivity to likely interferents contained in the waste gas other than the measured component;
- converter efficiency for P-AMS measuring NO_x ;
- converter efficiency of P-AMS measuring Hg;
- response factors for P-AMS measuring TOC;
- reproducibility;

- trueness and precision of the P-AMS against the SRM under field conditions if the P-AMS is based on an AM.

Additional performance characteristics specific to the SRM or AM are included in the performance test.

The quality assurance and quality control (QA/QC) procedures to be applied by the user of the P-AMS are also assessed in the performance test.

This document is an application and elaboration of EN ISO 9169 with additional and alternative provisions for the performance test of P-AMS. Where this document appears to differ from EN ISO 9169, it either elaborates upon the requirements of EN ISO 9169 or differs in minor ways owing to the necessity to conduct the performance test of P-AMS.

0.7 Relationship to EN 15267-3

This document is based on EN 15267-3, which specifies the performance test of stationary AMS for the continuous monitoring of emissions from stationary sources. Many requirements of this document are identical to those of EN 15267-3. This document deviates from EN 15267-3 only where the portable use and the use as SRM or AM require different or additional requirements. Therefore, this document allows a combined testing according to EN 15267-3 and EN 15267-4 where an AMS is designed for stationary and portable use. It also allows a reduced performance test of P-AMS, which have been already certified according to EN 15267-3 for stationary use.

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1 Scope

This document specifies the general performance criteria and test procedures for the performance test of portable automated measuring systems (P-AMS) used for periodic measurements of stationary source emissions. It applies to the performance test of P-AMS based on measurement techniques specified by the standard reference method (SRM) or an alternative method (AM).

The performance test is based on the general performance criteria and test procedures specified in this document and on the specific requirements specified for the SRM or AM. This includes testing of the applicability and correct implementation of the QA/QC procedures specified for the SRM or AM.

This document supports the requirements of particular EU Directives.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 14793, *Stationary source emissions - Demonstration of equivalence of an alternative method with a reference method*

EN 15259, *Air quality - Measurement of stationary source emissions - Requirements for measurement sections and sites and for the measurement objective, plan and report*

EN 50160, *Voltage characteristics of electricity supplied by public electricity networks*

EN 60068-2-6, *Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)*

EN 60529, *Degrees of protection provided by enclosures (IP Code)*

EN ISO 14956:2002, *Air quality - Evaluation of the suitability of a measurement procedure by comparison with a required measurement uncertainty (ISO 14956:2002)*

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