SLOVENSKI STANDARD
SIST EN 17656:2023

01-januar-2023

Emisije nepremičnih virov - Zahteve za sheme preverjanja usposobljenosti za izvajanje meritev emisij

Stationary source emissions - Requirements on proficiency testing schemes for emission measurements

Emissionen aus stationären Quellen - Anforderungen an Eignungsprüfungsprogramme für Emissionsmessungen

Émissions de sources fixes - Exigences relatives aux programmes d'essais d'aptitude destinés aux mesurages des émissions

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ICS:

13.040.40	Emisije nepremičnih virov	Stationary source emissions

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Stationary source emissions - Requirements on proficiency testing schemes for emission measurements

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 17656:2022) 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of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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.

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Introduction

Proficiency testing based on interlaboratory comparisons are widely used for a number of purposes and their use is increasing internationally. Typical purposes for proficiency testing can include:

— evaluation of the performance of laboratories for specific tests or measurements and monitoring laboratories' continuing performance;

— identification of problems in laboratories and initiation of actions for improvement which, for example, may be related to inadequate test or measurement procedures, effectiveness of staff training and supervision, or calibration of equipment;

— establishment of the effectiveness and comparability of test or measurement methods;

— provision of additional confidence to laboratory customers;

— identification of interlaboratory differences;

— education of participating laboratories based on the outcomes of such comparisons;

— validation of uncertainty claims.

The need for ongoing confidence in laboratory performance is not only essential for laboratories and their customers but also for other interested parties, such as regulators, laboratory accreditation bodies and other organizations that specify requirements for laboratories. EN ISO/IEC 17011 requires accreditation bodies to take account of laboratories' participation and performance in proficiency testing. The European Accreditation Organization (EA) recommends including such activities and their results more strongly in the demonstration of competence.

EN ISO/IEC 17043 specifies general requirements on the competence of proficiency testing providers. Their competence covers the design, the performance and the evaluation of proficiency tests. EN ISO/IEC 17043 explicitly states that this document can be used as a basis for the specification of specific technical requirements in specific fields of application.

This document is based on EN ISO/IEC 17043 and is designed such that it can be generally applied in combination with the most current version of EN ISO/IEC 17043. The structure of this document is aligned with the general structure of standards elaborated by ISO/CASCO.

NOTE ISO/CASCO has specified the following “Terms of Reference” for the revision of ISO/IEC 17043:2010: *Revise ISO/IEC 17043:2010 to insert new CASCO common elements and to make editorial changes to informational Annex B. Possibly make minor editorial clarifications in technical requirements to clarify PT for inspection and sampling. Align with other CASCO standards (e.g., ISO/IEC 17025 and ISO 17034 and related standards, e.g. ISO 13528 and ISO Guide 35). Help solve an outdated structure and requirements for management system, also confusion in symbols for statistical calculations. Bring harmony in structure and management system requirements for users who also operate testing and calibration laboratories and/or production of reference materials. Finally, bring consistency in requirements for 3rd party accreditation bodies.*

This document supplements EN ISO/IEC 17043 by providing clarification and additional information for proficiency testing schemes in the field of emission measurements. However, it will not re-state all the provisions of EN ISO/IEC 17043 and users are reminded of the need to comply with all the relevant criteria detailed in EN ISO/IEC 17043.

1 Scope

This document supplements the requirements of EN ISO/IEC 17043 by providing clarification and additional information for proficiency testing schemes for emission measurements. It gives specific requirements for:

— competence of proficiency testing providers;

— proficiency testing facility characteristics; and

— design, operation and evaluation of proficiency testing schemes by means of interlaboratory comparisons.

All these aspects are necessary in order to organize and conduct proficiency testing on emission measurements.

Requirements on the competence of proficiency testing providers cover personnel, organisation, equipment and environment.

Requirements on the proficiency testing facility characteristics cover measurement sections, measurements ports and working area for the participants.

Requirements on the proficiency testing schemes cover:

— design, including planning, preparations, homogeneity and stability of test atmospheres and statistical design;

— operation, including handling and instruction of participants;

— calculation and use of assigned values; and

— testing results evaluation, including statistical data.

This document supports the application of proficiency testing schemes for checking the performance of testing laboratories in the context of qualification, accreditation and related quality checks in relation to the application of standardized measurement methods such as standard reference methods (SRM) or alternative methods (AM).

This document is applicable in combination with EN ISO/IEC 17043 only.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

EN ISO 17034, *General requirements for the competence of reference material producers (ISO 17034)*

EN ISO/IEC 17043, *Conformity assessment - General requirements for proficiency testing (ISO/IEC 17043)*

ISO 13528:2022, *Statistical methods for use in proficiency testing by interlaboratory comparison*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO/IEC 17043 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
homogeneity
uniform distribution of chemical and physical properties of the sample gas within the geometry of the measurement plane

3.2
stability
uniform distribution of chemical and physical properties of the sample gas within the sampling time

3.3
measurement site
place on the waste gas duct in the area of the measurement plane(s) consisting of structures and technical equipment, for example working platforms, measurement ports, energy supply

Note 1 to entry: Measurement site is also known as sampling site.

[SOURCE: EN 15259:2007, 3.11]

3.4
measurement plane

plane normal to the centreline of the duct at the sampling position

Note 1 to entry: Measurement plane is also known as sampling plane.

[SOURCE: EN 15259:2007, 3.13]

3.5
measurement port
opening in the waste gas duct along the measurement line, through which access to the waste gas is gained

Note 1 to entry: Measurement port is also known as sampling port or access port.

[SOURCE: EN 15259:2007, 3.18]

3.6
measurement line
line in the measurement plane along which the measurement points are located, bounded by the inner duct wall

Note 1 to entry: Measurement line is also known as sampling line.

[SOURCE: EN 15259:2007, 3.15]

3.7
measurement point
position in the measurement plane at which the sample stream is extracted or the measurement data are obtained directly

Note 1 to entry: Measurement point is also known as sampling point.

[SOURCE: EN 15259:2007, 3.16]

3.8
standard reference method
SRM
reference method prescribed by European or national legislation

[SOURCE: EN 15259:2007, 3.9]

3.9
reference method
RM
measurement method taken as a reference by convention, which gives the accepted reference value of the measurand

Note 1 to entry: A reference method is fully described.

Note 2 to entry: A reference method can be a manual or an automated method.

Note 3 to entry: Alternative methods can be used if equivalence to the reference method has been demonstrated.

[SOURCE: EN 15259:2007, 3.8]

3.10
measurement method
method described in a written procedure containing all the means and procedures required to sample and analyse, namely field of application, principle and/or reactions, definitions, equipment, procedures, presentation of results, other requirements and measurement report

[SOURCE: EN 14793:2017, 3.4]

3.11
alternative method
AM
measurement method which complies with given criteria with respect to the reference method

Note 1 to entry: An alternative method can consist of a simplification of the reference method.

[SOURCE: EN 14793:2017, 3.3, modified – "the criteria given by this European Standard" has been replaced by "given criteria"]

4 General requirements

4.1 Basic items for proficiency testing schemes for emission measurements

Application of EN ISO/IEC 17043 to proficiency testing on emission measurement methods require specific solutions due to the specific nature of emission measurements.

The specific nature of emission measurements includes:

— complex gas matrix including pollutants of interest and possible interferents;

— wide concentration ranges;

— water-vapour content (condensing or non-condensing);

— high sample gas temperature;

— sample stability and sample transport.

Different technical designs of proficiency testing facilities are possible to address the points above.

NOTE Interlaboratory testing facilities are typically used as proficiency testing facilities.

Test atmospheres can be obtained:

— from real boilers, furnaces or burning devices using their real emissions;

— using ambient air as main matrix and adding known quantities of solid, liquid or gaseous compounds for pollutants of interest and possible interferents;

— using only synthetic gaseous, liquid and/or solid reference materials for pollutants of interest and possible interferents.

Proficiency testing facilities can have different mechanical designs:

— single pass facilities, in which the test atmosphere is treated in order to obtain the required conditions at the measurement planes, purified and then released;

— recirculating facilities, in which the test atmosphere is treated in order to obtain the required conditions at the measurement planes and recirculated several times before it is purified and then released.

Proficiency testing facilities can provide different solutions regarding the type of sampling system:

— internal dimensions and flow rate in the proficiency testing facility allow the implementation of sampling systems compliant with the measurement method;

— special sampling systems prepared by the proficiency testing provider, e.g. due to reduced dimensions of the proficiency testing facility.

All these parameters affect the characteristics of the proficiency testing facility and the proficiency testing schemes that can be hosted.

4.2 Impartiality

The requirements on impartiality specified in EN ISO/IEC 17043 apply.

4.3 Confidentiality

In case of proficiency testing schemes, where participants have to take samples in parallel or have to measure in parallel, the proficiency testing provider has no obligation to ensure confidentiality of the identity of the participants among themselves.

5 Structural requirements

The structural requirements specified in EN ISO/IEC 17043 apply.

NOTE The structural requirements include e.g. requirements on organization, activities and management structure of the proficiency testing provider.

6 Resource requirements

6.1 General

The general resource requirements specified in EN ISO/IEC 17043 apply.

6.2 Personnel

The proficiency testing provider shall employ at least one technical supervisor as well as sufficient technical personnel and, depending on the proficiency testing scheme, additional scientific personnel for compliance with the offered services. The proficiency testing provider should employ at least one deputy to the technical supervisor. The deputy has to meet all requirements of the technical supervisor. The proficiency testing provider shall ensure the competence and impartiality of the personnel.

The technical personnel shall have appropriate technical education for working in the corresponding proficiency testing schemes or shall have working experience in the framework of proficiency testing schemes.

The technical supervisor shall demonstrate:

— knowledge of measurement techniques and practical experience in the field of the corresponding proficiency testing scheme including the design, performance and evaluation of proficiency tests;

— knowledge of quality management procedures, specifically in the sense of EN ISO/IEC 17043.

Furthermore, evidence shall be provided on:

— a conceptual and scientific activity in emissions monitoring and/or standardization field; and

— a statistical and mathematical knowledge.

The following can be used to demonstrate competence:

— an appropriate course of study in natural sciences or engineering at a university or a technical college or other relevant technical courses;

— evidence of knowledge provided by either presentation of measurement reports, undertaking examinations and skill assessments;

— evidence of experience acquired using training records, which demonstrate a specified minimum amount of work that has provided relevant knowledge and practical experience.

Personnel shall be contracted (permanently or project-related). Contracts shall include at least the following:

— description of the duties, responsibilities, authorities;

— temporal extent of contract;

— regulations on confidentiality, independence and freedom of conflicting interests;