SLOVENSKI STANDARD

SIST-TS CEN/TS 15675:2008

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Kakovost zraka - Meritve emisije nepremiļ nih virov - Uporaba EN ISO/IEC 17025:2005 pri periodiļ nih meritvah

Air quality - Measurement of stationary source emissions - Application of EN ISO/IEC 17025:2005 to periodic measurements

Luftbeschaffenheit - Messung von Emissionen aus stationären Quellen - Anwendung der EN ISO/IEC 17025:2005 auf wiederkehrende Messungen

Qualité de l'air - Mesurage des émissions de sources fixes - Application de l'EN ISO /CEI 17025:2005 a des mesures périodiques

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TECHNICAL SPECIFICATION

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English Version

Air quality - Measurement of stationary source emissions - Application of EN ISO/IEC 17025:2005 to periodic measurements

Qualité de l'air - Mesures des émissions de sources fixes - Application de EN ISO/CEI 17025:2005 à des mesures périodiques

Luftbeschaffenheit - Messung von Emissionen aus stationären Quellen - Anwendung der EN ISO/IEC 17025:2005 auf wiederkehrende Messungen

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Foreword

This document (CEN/TS 15675:2007) has been prepared by Technical Committee CEN/TC 264 “Air Quality”, the secretariat of which is held by DIN.

This document has been prepared by WG 19 “Emissions monitoring strategy” of CEN/TC 264 as one of three basic documents on measurements of stationary source emissions consisting of:

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

— CEN/TS 15674, *Air quality — Measurement of stationary source emissions — Guidelines for the elaboration of standardised methods*

— CEN/TS 15675, *Air quality — Measurement of stationary source emissions — Application of EN ISO/IEC 17025:2005 to periodic measurements*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

The European Standard EN ISO/IEC 17025:2005 contains the general requirements for the competence of testing laboratories if they wish to demonstrate that they operate a quality system, are technically competent and are able to generate technically valid results.

EN ISO/IEC 17025:2005 recognises at 1.6, Note 1, that it might be necessary to explain or interpret certain requirements in this European Standard to ensure that the requirements are applied in a consistent manner. This Technical Specification provides guidance on the application of EN ISO/IEC 17025:2005 in the specific field of periodic measurement of emissions from stationary sources. In producing this document the guidance for establishing applications for specific fields given in Annex B of EN ISO/IEC 17025:2005 has been followed.

The periodic measurement of emissions can be undertaken for a wide range of substances using various techniques, which have both sampling and analytical components. Examples of relevant CEN and ISO methods are listed at Annex A.

The periodic measurement of emissions has widespread uses, particularly where automated measuring systems (AMS) for permanent installation are not available or are judged to be inappropriate for reasons of cost or technical application. These uses, which can be carried out for regulatory purposes, include

— measurements for determining compliance with emission limit values,

— calibrating AMS,

— field testing of AMS for conformance assessment,

— acceptance trials on new pollution abatement plan and

— determining emission factors for use in emissions trading and inventory reporting.

In this field of measurement of stationary source emissions sampling in situ and analysis in the laboratory are two very different activities which are generally performed by two different teams which may not belong to the same laboratory. For the purposes of conformance with 4.5 of EN ISO/IEC 17025:2005 either the sampling team or the analytical team should be identified as the lead contractor with the other identified as the sub-contractor. In these circumstances the interface requirements between the teams and the minimum requirements, as specified in the relevant measurement method, for the sampling and analysis activities should be clearly documented. By these means the tasks to be audited in any auditing and/or accreditation process should be clearly identified.

In some EU member states, accreditation of sampling and analysis is required for carrying out periodic measurement for regulatory purposes. Where this is not the case, it is still generally preferred that the subcontractor is accredited to EN ISO/IEC 17025:2005 for the relevant scope of sampling or analysis. If this is not available the lead contractor should audit the sub-contractor to verify its competence according to EN ISO/IEC 17025:2005. Also in some EU member states there can be legal requirements that

— both the sampling and analysis are carried out by a single laboratory, or

— the sampling team is always the lead contractor and is responsible for the whole of the measurement including signing of off the overall measurement report.

This Technical Specification supplements EN ISO/IEC 17025:2005 by providing clarification and additional information. However, it does not re-state all the provisions of EN ISO/IEC 17025:2005 and laboratories are reminded of the need to comply with all of the relevant criteria detailed in EN ISO/IEC 17025:2005. The clause numbers in this document follow those of EN ISO/IEC 17025:2005 although the text from EN ISO/IEC 17025:2005 is not repeated. EN ISO/IEC 17025:2005 remains the authoritative document and in cases of dispute the individual accreditation bodies have the task to adjudicate on unresolved matters.

A list of abbreviations used in this Technical Specification is provided in Annex G.

1 Scope

This Technical Specification supplements the requirements of EN ISO/IEC 17025:2005, and is suitable for the demonstration of competence of laboratories that undertake periodic measurement of emissions from stationary sources including

— the taking of representative samples of emissions and subsequent laboratory analysis for gases and for particulate species,

— the determination of reference quantities such as temperature, pressure, water vapour and oxygen content in the field and

— the use of portable instruments (such as hand held instruments and transportable instruments used in mobile laboratories) in the field.

This Technical Specification is applicable to all laboratories undertaking the periodic measurement of emissions from stationary sources, the calibration of installed automated measuring systems in accordance with EN 14181:2004 and/or the field testing of automated measuring systems for conformity assessment purposes.

2 Normative references

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.

EN ISO/IEC 17025:2005, *General requirements for the competence of testing and calibration laboratories (ISO/IEC 17025:2005)*

EN 15259:2007, *Air quality — Measurement of stationary source emissions — Requirements for measurement sections and sites and for the measurement objective, plan and report*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
testing laboratory
laboratory that performs tests

NOTE 1 The term “testing laboratory” can be used in the sense of a legal entity, a technical entity or both.

NOTE 2 A testing laboratory undertakes work at the laboratory’s permanent facilities, at sites away from their permanent facilities and in temporary or mobile laboratories.

NOTE 3 The sampling and analysis stages often occur at different locations as the analysis stage can be carried out at a permanent laboratory.

[EN 15259:2007, 3.31]

3.2
testing
action of carrying out one or more tests

3.3
test
technical operation that consists of the determination of one or more characteristics of a given product, process or service according to a specified procedure

NOTE For emission measurements, a test consists of a series of measurements of one measurand or of combined measurements of several measurands.

3.4
conformity assessment
demonstration that specified requirements relating to a product, process, system, person or body are fulfilled

[EN ISO/IEC 17000:2004, 2.1]

NOTE In air quality this is often referred to as suitability testing where measurements and evaluations are carried out on an automated measurement system (AMS) and/or equipment to determine its compliance with specified performance criteria.

3.5
measurement
set of operations having the object of determining a value of a quantity

[VIM:1993, 2.1]

NOTE The operations can be performed automatically.

3.6
periodic measurement
determination of a measurand at specified time intervals

NOTE The specified time intervals can be regular (e.g. once every month) or irregular. Measurands can include the amount or physical property of an emission. Measurements are usually made using portable equipment for typically less than 24 h.

[EN 15259:2007, 3.3]

3.7
measurement series
successive measurements of the same measurand carried out at the same measurement plane and at the same process operating conditions

3.8
measurement method
logical sequence of operations, described generically, used in the performance of measurements

NOTE 1 Measurement methods are primarily EN, ISO or national standards.

NOTE 2 Measurement methods can be defined by regulation and specified by the regulator. The method used can be specified in the customer contract.

3.9
operating procedure
OP
laboratory's written procedures on how to perform a method

NOTE These procedures provide generic instructions.

3.10
reference method
RM
measurement method taken as a reference by convention, which gives the accepted reference value of the measurand

NOTE 1 A reference method is fully described.

NOTE 2 A reference method can be a manual or an automated method.

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

[EN 15259:2007, 3.8]

3.11
standard reference method
SRM
reference method prescribed by European or national legislation

[EN 15259:2007, 3.9]

NOTE 1 Standard reference methods are used e.g. to calibrate and validate AMS and for periodic measurements to check compliance with limit values.

NOTE 2 See Annex C for examples of SRM.

3.12
automated measuring system
AMS
measuring system permanently installed on site for continuous monitoring of emissions

NOTE An AMS is a method which is traceable to a reference method.

[EN 14181:2004, 3.2]

3.13
sampling equipment
equipment used to take samples of emissions, instruments used for direct reading of emissions and instruments used to gather supporting information on environmental conditions pertaining at the time of the measurements

3.14
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 Measurement site is also known as sampling site.

[EN 15259:2007, 3.11]

3.15
measurand
particular quantity subject to measurement

[VIM:1993, 2.6]

NOTE The measurand is a quantifiable property of the waste gas under test, for example mass concentration of a measured component, temperature, velocity, mass flow, oxygen content and water vapour content.

3.16
reference quantity
specified physical or chemical quantity which is needed for conversion of the measurand to standard conditions

NOTE Reference quantities are e.g. temperature (T_{ref} = 273,15 K), pressure (p_{ref} = 101,325 kPa), water vapour volume fraction (h_{ref} = 0 %), and oxygen volume fraction o_{ref}.

[EN 15259:2007, 3.7]

3.17
field blank value
result of a measurement determined according to the field blank procedure at the plant site and in the laboratory in an identical manner to the normal measurements in the series, except that no waste gas is sampled during the measurement of the field blank

3.18
measurement objective
scope of the measurement programme

[EN 15259:2007, 3.20]

3.19
measurement plan
structured procedure to fulfil a defined measurement objective

[EN 15259:2007, 3.21]

3.20
site review
visit conducted by the testing laboratory before undertaking emission measurements to ensure that the physical and logistical situation is fully understood before arriving on-site to conduct work

NOTE The site review provides information essential for determining the appropriate measurement method and development of the measurement plan.

[EN 15259:2007, 3.23]

3.21
measurement record sheet
sheet on which the laboratory's on-site measurement data and operations are recorded at the time they are made

3.22
measurement programme file
file in which details of the measurement programme for an individual site are recorded

3.23
measurement report
report established by the testing laboratory according to the customer request and containing at least the information required in the standards applied in the measurements programme, in particular EN 15259

3.24
stationary source
fixed position industrial process from which emissions to the atmosphere are made

3.25
duct
structure which conveys the waste gas

3.26
stack
structure through which waste gas is released to the atmosphere

NOTE Stacks are intended to be of sufficient height to adequately disperse emissions in the atmosphere. Stacks can contain one or more ducts. Measurement of emissions can be undertaken in stacks and ducts.

3.27
competent authority
organisation responsible for implementing environmental policy and legislation

3.28
customer
organization or person that defines the measurement objective and receives the measurement report

NOTE Adapted from EN ISO 9000:2000, Definition 3.3.5.

3.29
emission limit value
numerical limit on an emission, which may not be exceeded during one or more periods of time

NOTE 1 Emission limit values can be related for example to mass or mass concentration.

NOTE 2 Emission limit values can also be laid down for certain groups, families or categories of substances.

4 Management requirements

No additional information to EN ISO/IEC 17025:2005.

5 Technical requirements

5.1 General

No additional information to EN ISO/IEC 17025:2005.

5.2 Personnel

Generic criteria for personnel competency are required. An example is given in Annex B.

Emission measurement at stationary sources is complex and requires the ability to work under difficult operating conditions. Staff should be assessed to ensure they meet the physical fitness requirements to operate under difficult conditions.

Personnel competence is a key aspect of emission measurements because the sampling is often carried out in arduous and hazardous circumstances. EN ISO/IEC 17025:2005 recognises that personnel certification can be required for certain applications and maybe a regulatory requirement. The provision of such a scheme should be consistent with the generic requirements described in Annex B.

NOTE Auditors acting on behalf of accreditation bodies assess the competence of personnel for example during site visits and take into account education, experience and any personnel certification scheme.

5.3 Accommodation and environmental conditions

5.3.1 Equipment and reagents shall be protected from damage during storage and transportation from a laboratory's permanent site to the location where samples or measurements are to be made at the stationary source.

Sampling for periodic measurements is undertaken on industrial plants often at height in difficult conditions. A suitable platform shall be provided that meets the size and safety requirements for the correct performance of the measurement exercise as specified in EN 15259.

Temporary shelter and portable lighting shall be used when appropriate to protect from weather conditions and ensure safe working conditions for the correct performance of the measurement exercise.

NOTE 1 Methods can advise on the means of protecting the integrity of reagents during storage and transportation. It is good practice to store reagents and samples out of direct sunlight and at a suitable controlled temperature.

The measurement site should be easily and safely accessible via stairs. To transport measuring instruments, in the case of measurement sites, which are not at ground level, transport means should be provided, for example hoists or lifts.

When the measurement site is being selected, it should not be in the area of sources that emit unexpectedly, for example rupture disks, overpressure valves or steam discharges. Any hazard should be excluded by structural or organisational measures.

For safety reasons, it is preferable that the measurement section should not be in a region of positive pressure.

Suitable measures should ensure that the laboratory personnel carrying out the sampling are informed of any process operating faults which could endanger them.

It is advantageous to accommodate the working platform or measurement site within the plant building. Particular care should be taken to ensure that the working area is sufficiently protected from heat and dust. Otherwise, protective measures, for example weather protection and heating, should be taken to ensure the necessary environmental conditions for the sampling personnel and the equipment being used.

NOTE 2 Environmental conditions can affect the measurement result. The ability to follow methods and thereby produce reliable results can be impaired by adverse weather conditions such as wind, rain, snow and inadequate light.

Service requirements such as electricity supply should also be considered.

5.3.2 The possible affects of environmental conditions on ambient temperature shall be managed by the following:

— recording and taking account of the ambient temperature at the measurement site;

— maintaining the temperature of heated equipment at the operating conditions for the particular method being used;

— keeping portable analysers at their specified operational temperature range;

— maintaining a stable and appropriate ambient temperature in mobile laboratories while analysers are operating.

5.3.3 Emission measurements have a high potential for contamination of samples. The laboratory shall identify and assess the risk of contamination and a clean area shall be available for setting up, recovering and storing equipment and samples.

NOTE A clean area can be designated in an area close to the place where work is being carried out if the risk of contamination is low. The use of field blanks indicates retrospectively if the sample is contaminated.