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Air quality - Certification of automated measuring systems - Part 1: General principles

Luftbeschaffenheit - Zertifizierung von automatischen Messeinrichtungen - Teil 1: Grundlagen

Qualité de l'air - Certification des systemes de mesurage automatisés - Partie 1 : Principes généraux

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Air quality - Certification of automated measuring systems - Part 1: General principles

Qualité de l'air - Certification des systèmes de mesurage automatisés - Partie 1 : Principes généraux

Luftbeschaffenheit - Zertifizierung von automatischen Messeinrichtungen - Teil 1: Grundlagen

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Foreword

This document (EN 15267-1:2009) 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of an identical text or by endorsement, at the latest by September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document is Part 1 of a series of European Standards:

EN 15267-1, *Air quality — Certification of automated measuring systems — Part 1: General principles*

EN 15267-2, *Air quality — Certification of automated measuring systems — Part 2: Initial assessment of the AMS manufacturer's quality management system and post certification surveillance for the manufacturing process*

EN 15267-3, *Air quality — Certification of automated measuring systems — Part 3: Performance criteria and test procedures for automated measuring systems for monitoring emissions from stationary sources*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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 certification of automated measuring systems (AMS) supports the requirements of certain Directives of the European Union (EU), which require, either directly or indirectly, that AMS comply with performance criteria, maximum permissible measurement uncertainties and testing requirements. These Directives include the Directive on the limitation of emissions of certain pollutants into the air from large combustion plants [1], the Directive on the incineration of waste [2] and the Framework Directive on ambient air quality assessment and management [3] and the associated daughter directives [4], [5], [6] and [7].

The responsibility for approving AMS for monitoring ambient air quality under Directive 96/62/EC lies with the national competent authority or a body designated by the EU member state. No explicit requirement for approving AMS for monitoring emissions from stationary sources is defined in the relevant EU Directives, although the competent authorities in some EU member states have such arrangements in place.

In some EU member states the competent authority delegates the responsibility for approval of AMS to a certification body accredited to EN 45011 by national accreditation bodies. In some EU member states the competent authority cannot be accredited by external bodies, in others they may be. These approaches have built up over many years and reflect the different administrative and legal arrangements that exist in the EU member states. In order to recognize these different approaches, this European Standard uses the collective term “relevant body” when referring to competent authority or certification body. The terms “competent authority” and “certification body” are only used where it is necessary to be specific for the purpose of clarity in the way in which a requirement applies under the different approaches.

The European Standard EN 45011 specifies general criteria that a certification body operating product certification shall follow if it is to be recognized at a national or European level as competent and reliable in the operation of a product certification system, irrespective of the sector involved. It is intended for the use of accreditation bodies concerned with recognizing the competence of certification bodies. EN 45011 is identical to ISO/IEC Guide 65. The document EA-6/01 [8] published by the International Accreditation Forum (IAF) provides guidelines on the application of EN 45011. The purpose of EA-6/01 is to harmonise the worldwide application of EN 45011 by accreditation bodies as an important step towards mutual recognition between certification bodies under the IAF Multilateral Agreement (MLA).

EN 45011 recognizes that these general criteria may have to be supplemented when applied to a particular sector. This European Standard provides guidance on the application of EN 45011 to the certification of AMS for monitoring ambient air quality and emissions from stationary sources. It is Part 1 of a three part series of European Standards, which specify common requirements for the certification of AMS in EU member states.

This European Standard defines common procedures and requirements for the certification of AMS to facilitate mutual recognition by the relevant bodies and thereby minimise administrative and cost burdens on AMS manufacturers seeking certification in multiple member states. It also describes the roles and responsibilities of manufacturers, test laboratories, certification bodies (for quality management systems) and relevant bodies under these procedures.

1 Scope

This European Standard specifies the general principles, including common procedures and requirements, for the product certification of automated measuring systems (AMS) for monitoring ambient air quality and emissions from stationary sources. This product certification consists of the following sequential stages:

a) performance testing of an automated measuring system;

b) initial assessment of the AMS manufacturer's quality management system;

c) certification;

d) surveillance.

This European Standard applies to the certification of all AMS for monitoring ambient air quality and emissions from stationary sources for which performance criteria and test procedures are available in European Standards.

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 14211, *Ambient air quality — Standard method for the measurement of the concentration of nitrogen dioxide and nitrogen monoxide by chemiluminescence*

EN 14212, *Ambient air quality — Standard method for the measurement of the concentration of sulphur dioxide by ultraviolet fluorescence*

EN 14625, *Ambient air quality — Standard method for the measurement of the concentration of ozone by ultraviolet photometry*

EN 14626, *Ambient air quality — Standard method for the measurement of the concentration of carbon monoxide by nondispersive infrared spectroscopy*

EN 14662-3, *Ambient air quality — Standard method for measurement of benzene concentrations — Part 3: Automated pumped sampling with in situ gas chromatography*

EN 15267-2, *Air quality — Certification of automated measuring systems — Part 2: Initial assessment of the AMS manufacturer's quality management system and post certification surveillance for the manufacturing process*

EN 15267-3, *Air quality — Certification of automated measuring systems — Part 3: Performance criteria and test procedures for automated measuring systems for monitoring emissions from stationary sources*

EN 45011, *General requirements for bodies operating product certification systems (ISO/IEC Guide 65:1996)*

EN ISO 9001, *Quality management systems — Requirements (ISO 9001:2000)*

EN ISO/IEC 17021, *Conformity assessment — Requirements for bodies providing audit and certification of management systems (ISO/IEC 17021:2006)*

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

3 Terms and definitions

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

3.1
automated measuring system
AMS
entirety of all measuring instruments and additional devices for obtaining a result of measurement

NOTE 1 Apart from the actual measuring device (the analyser), an AMS includes facilities for taking samples (e.g. probe, sample gas lines, flow meters and regulator, delivery pump) and for sample conditioning (e.g. dust filter, pre-separator for interferents, cooler, converter). This definition also includes testing and adjusting devices that are required for functional checks and, if applicable, for commissioning.

NOTE 2 The term “automated measuring system” (AMS) is typically used in Europe. The terms “continuous emission monitoring system” (CEM) and “continuous ambient-air-quality monitoring system” (CAM) are also typically used in the UK and USA.

3.2
relevant body
competent authority or certification body, nominated by a competent authority or EU member state, that carries out the certification of automated measuring systems

3.3
competent authority
organisation which implements the requirements of EU Directives and regulates installations, which must comply with the requirements of applicable European Standards

3.4
certification body
any body operating a product certification system or any body accredited to EN ISO/IEC 17021 for the certification of quality management systems

3.5
manufacturer
organisation, situated at a stated location or locations, that carries out or controls such stages in the manufacture, assessment, handling and storage of a product that enables it to accept responsibility for continued compliance of the product and its certification, and undertakes all obligations in that connection

NOTE The term "manufacturer" is used instead of "organisation" as used in EN ISO 9001. For the purpose of this document they are interchangeable.

3.6
test laboratory
laboratory accredited to EN ISO/IEC 17025 for carrying out the performance tests on automated measuring systems in accordance with applicable European Standards

3.7
product
automated measuring system

3.8
technical file
record of the reference documents and design changes to the reference documents

3.9
reference document
document that controls the manufacture and design of an AMS and is referenced in the test report

NOTE Reference documents can include drawings, specifications, instructions and computer code.

3.10
related document
document not referenced in the test report

NOTE A related document can be used, for example, for the detailed manufacture of component parts.

3.11
certification range
range over which the automated measuring system is tested and certified for compliance with the relevant performance criteria

NOTE 1 The lower limit is typically the detection limit of the AMS and often considered to be zero.

NOTE 2 Generally, the lower the certification range, the better the performance of the AMS. Also an AMS typically performs satisfactorily at higher values over the measurement range.

3.12
surveillance
systematic iteration of conformity assessment activities as a basis for maintaining the validity of the statement of conformity

[EN ISO/IEC 17000:2004, 6.1]

NOTE For the purposes of this European Standard surveillance focuses on the manufacturer's quality management system to ensure that automated measuring systems continue to comply with the standard to which they are certified.

3.13
legislation
directives, acts, ordinances and regulations

4 Abbreviations

AMS automated measuring system

EA European Co-operation for Accreditation

EU European Union

IAF International Accreditation Forum

MLA Multilateral Agreement

QMS quality management system

5 Principles

5.1 Performance testing of the automated measuring system

Performance testing consists of a combination of laboratory and field testing. Laboratory testing is designed to assess whether an automated measuring system (AMS) can meet, under controlled conditions, the performance criteria specified for the relevant performance characteristics. Field testing, over a minimum three month period, is designed to assess whether an AMS can continue to work and meet the relevant performance criteria in a real application. For emissions monitoring, AMS field testing is carried out on an industrial installation representative of the intended application for the AMS for which the manufacturer seeks