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Ventilation for buildings - Measurement of air flow rates on site - Methods

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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ICS 17.120.10, 91.140.30

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EUROPEAN STANDARD

EN 16211

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2024

ICS 17.120.10; 91.140.30

Supersedes EN 16211:2015

English Version

Ventilation for buildings - Measurement of air flow rates on site - Methods

Ventilation des bâtiments - Mesurages des débits d'air
sur site - Méthodes

Lüftung von Gebäuden - Luftvolumenstrommessung in
Lüftungssystemen - Verfahren

This European Standard was approved by CEN on 30 September 2024.

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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 16211:2024) has been prepared by Technical Committee CEN/TC 156 “Ventilation for buildings”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by May 2025, and conflicting national standards shall be withdrawn at the latest by May 2025.

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 16211:2015.

In addition to a number of editorial revisions, the main changes compared with EN 16211:2015 are as follows:

- the whole document has been rearranged;
- the method described previously in EN 12599:2012 to measure air (volume) flow rate in ductwork has been included;
- the tracer gas method has been moved in Annex A (informative);
- two new methods to measure air flow rate at exhaust and intake grille have been added in Annex A (informative);
- parts dealing with uncertainty have been replaced by Annex B (informative);
- requirements on measuring devices are now expressed in MPME (maximum permissible measurement error).

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

Introduction

Measurement of the air (volume) flow rate in a ventilation system is of general interest that is not related to a specific operation or stage (e.g. installation, inspection, commissioning or handover). It was therefore agreed to take advantage of the simultaneous revision of EN 16211:2015 and EN 12599:2012 to address this subject in a single document (EN 16211:2024) rather than scattering or repeating it in various documents.

In this document, all types of measurements are air (volume) flow rate. For the sake of readability, the term "air (volume) flow rate" is replaced in the text by the contracted term "air flow rate".

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1 Scope

This document specifies methods for the measurement of air flow rates on site. It provides a description of the air flow rate measurement methods and how measurements are performed within the margins of stipulated method uncertainties. It gives the necessary measurement conditions (e.g. length of straight duct, uniform velocity profile) to achieve the stipulated measurement uncertainties.

The methods for measuring the air flow rate inside ducts do not apply to:

- ducts that are not circular or rectangular (e.g. oblong ducts);
- flexible ducts.

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 12792, *Ventilation for buildings — Symbols, terminology and graphical symbols*

EN 14277, *Ventilation for buildings — Air terminal devices — Method for airflow measurement by calibrated sensors in or close to ATD/plenum boxes*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12792 and the following apply.

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

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/>

3.1

measuring interval

set of values of quantities of the same kind that can be measured by a given measuring instrument or measuring system with specified instrumental measurement uncertainty, under defined conditions

Note 1 to entry: In some fields, the term is “measuring range” or “measurement range”.

[SOURCE: JCGM 200:2012, 4.7, modified – Note 2 has not been reproduced.]

3.2

maximum permissible measurement error

extreme value of measurement error, with respect to a known reference quantity value, permitted by specifications or regulations for a given measurement, measuring instrument or measuring system

Note 1 to entry: More information on the calculation of the measurement uncertainty based on the maximum permissible measurement error is given in Annex B.

[SOURCE: JCGM 200:2012, 4.26, modified – The accepted terms “maximum permissible error” and “limit of error” have been removed, NOTE 1 and NOTE 2 have been removed, a Note 1 to entry has been added.]