SLOVENSKI STANDARD
SIST EN ISO 12759:2015

01-oktober-2015

Ventilatorji - Klasifikacija učinkovitosti za ventilatorje (ISO 12759:2010, vključuje dopolnilo A1:2013)

Fans - Efficiency classification for fans (ISO 12759:2010, including Amd 1:2013)

Ventilatoren - Effizienzklassifizierung für Ventilatoren (ISO 12759:2010, einschließlich Amd 1:2013)

Ventilateurs - Classification du rendement des ventilateurs (ISO 12759:2010, y compris Amd 1:2013)

Ta slovenski standard je istoveten z: **EN ISO 12759:2015**

ICS:

23.120	Zračniki. Vetrniki. Klimatske naprave	Ventilators. Fans. Air-conditioners

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 12759

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ICS 23.120

English Version

Fans - Efficiency classification for fans (ISO 12759:2010, including Amd 1:2013)

Ventilateurs - Classification du rendement des ventilateurs (ISO 12759:2010, y compris Amd 1:2013)

Ventilatoren - Effizienzklassifizierung für Ventilatoren (ISO 12759:2010, einschließlich Amd 1:2013)

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

European foreword

The text of ISO 12759:2010, including Amd 1:2013, has been prepared by Technical Committee ISO/TC 117 “Fans” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 12759:2015 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of an identical text or by endorsement, at the latest by January 2016, and conflicting national standards shall be withdrawn at the latest by January 2016.

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Endorsement notice

The text of ISO 12759:2010, including Amd 1:2013, has been approved by CEN as EN ISO 12759:2015 without any modification.

INTERNATIONAL STANDARD

ISO 12759

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Fans — Efficiency classification for fans

Ventilateurs — Classification du rendement des ventilateurs

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Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 12759 was prepared by Technical Committee ISO/TC 117, *Fans*.

Introduction

The last decade has seen not only an escalation in the price, but also an increasing recognition of the finite life of many of the fossil fuels in use. There is also a belief that climatic change is due to an increase in the levels of carbon dioxide in the atmosphere. This has lead to many nations reviewing methods of energy generation and usage.

Therefore, there is a need to promote energy efficiency in order to maintain economic growth. This requires better selection of equipment by users and better design of this equipment by manufacturers.

Fans of all types are used for ventilation and air conditioning, process engineering (drying, pneumatic conveying), combustion air supply and agriculture, etc. Indeed, the energy usage by fans has been calculated as nearly 20 % of worldwide demand.

The fan industry is of a global nature, with a considerable degree of exporting and licensing. To ensure that defined fan performance characteristics are common throughout the world, a series of International Standards has been developed. It is the belief of the industry that there is a need for the recognition of minimum efficiency standards. To encourage their implementation, a classification system is proposed which incorporates a series of efficiency bands. With improvements in technology and manufacturing processes, the minimum efficiency levels can be reviewed and increased over time.

This International Standard can be used by legislators or regulatory bodies for defining future energy saving targets.

Fans — Efficiency classification for fans

1 Scope

This International Standard establishes a classification of fan efficiency for all fan types driven by motors with an electrical input power range from 0,125 kW to 500 kW. This International Standard is applicable to bare shaft and driven fans, as well as fans integrated into products. Fans integrated into products are measured as stand-alone fans.

This International Standard is not applicable to:

a) fans for smoke and emergency smoke extraction;

b) fans for industrial processes;

c) fans for automotive application, trains and planes;

d) fans for potentially explosive atmospheres;

e) box fans, powered roof ventilators and air curtains;

f) jet fans for use in car parks and tunnel ventilation.

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.

ISO 5801:2007, *Industrial fans — Performance testing using standardized airways*

ISO 13348:2007, *Industrial fans — Tolerances, methods of conversion and technical data presentation*

ISO 13349:2010, *Fans — Vocabulary and definitions of categories*

IEC 60034-2-1, *Rotating electrical machines — Part 2-1: Standard methods for determining losses and efficiency from tests (excluding machines for traction vehicles)*

IEC 60034-30, *Rotating electrical machines — Part 30: Efficiency classes of single-speed, three-phase, cage-induction motors*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 13349 and the following apply.

NOTE See, in particular, ISO 13349:2010, Tables 4 and 5, as well as the associated equations in Clause 5 of this International Standard and ISO 5801.

3.1 Fans — General

3.1.1
fan
rotary bladed machine which receives mechanical energy and utilizes it by means of one or more impellers fitted with blades to maintain a continuous flow of air or other gas passing through it and whose work per unit mass does not normally exceed 25 kJ/kg

NOTE 1 Fans are defined according to their installation category, function, fluid path and operating conditions.

NOTE 2 Adapted from ISO 13349:2010, definition 3.1.1.

3.1.2
fan size
maximum impeller tip diameter, D, on which the design of the fan is based

3.1.3
drive
⟨transmission and motor/control system⟩ device used to power the fan, including motor, mechanical transmission and motor/control system

NOTE 1 Examples of mechanical transmission are belt drive and couplings.

NOTE 2 Examples of a motor or control system are variable frequency controller and electronic commutator.

3.1.4
bare shaft fan
fan without drives, attachments or accessories (appurtenance)

See Figure 1.

NOTE Adapted from ISO 13349:2010, definition 3.1.2.

3.1.5
driven fan
one or more impellers fitted to or connected to a motor, with or without a drive mechanism, a housing and a means of variable speed drive

See Figure 2.

NOTE Adapted from ISO 13349:2010, definition 3.1.3.

3.1.6
air
abbreviated term for the expression “air or other gas”

[ISO 13349:2010, definition 3.2]

3.1.7
standard air
atmospheric air having a density of exactly 1,2 kg/m^3

NOTE 1 Atmospheric air at a temperature of 16 °C, a pressure of 100 000 Pa and a relative humidity of 65 %, has a density of 1,2 kg/m^3, but these conditions do not form part of the definition.

NOTE 2 Adapted from ISO 13349:2010, definition 3.3.

3.2 Fan or test installation categories according to the arrangement of ducting

See Figure 3 and ISO 13349.

3.2.1
installation category A
installation with free inlet and free outlet

3.2.2
installation category B
installation with free inlet and ducted outlet

3.2.3
installation category C
installation with ducted inlet and free outlet

3.2.4
installation category D
installation with ducted inlet and ducted outlet

3.3 Fans — Definitions relating to calculations

3.3.1
average density at fan inlet
ρ_1
fluid density calculated from the absolute pressure and the static temperature

3.3.2
atmospheric pressure
p_a
pressure, measured with respect to absolute zero pressure, which is exerted at a point at rest relative to the air around it

3.3.3
fan pressure
p_f
difference between the stagnation pressure at the fan outlet and the stagnation pressure at the fan inlet

3.3.4
fan static pressure
p_{sf}
conventional quantity defined as the fan pressure minus the fan dynamic pressure at the fan outlet corrected by the Mach factor

3.3.5
absolute stagnation pressure at a point
p_{sg}
absolute pressure which would be measured at a point in a flowing gas, if it were brought to rest via an isentropic process

3.3.6
conventional dynamic pressure at a point
p_d
pressure calculated from the velocity and the density of the air at the point