SLOVENSKI STANDARD
oSIST prEN ISO 12759-3:2017

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Ventilatorji - Klasifikacija učinkovitosti za ventilatorje (ISO/DIS 12759-3:2016)

Fans - Efficiency classification for fans - Part 3: Fans without drives at maximum operating speed (ISO/DIS 12759-3:2016)

Ventilatoren - Effizienzklassifizierung für Ventilatoren - Teil 3: Ventilatoren ohne Antriebe bei maximaler Betriebsgeschwindigkeit (ISO/DIS 12759-3:2016)

Ventilateurs - Classification du rendement des ventilateurs (ISO/DIS 12759-3:2016)

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Fans — Efficiency classification for fans —

Part 3:
Fans without drives at maximum operating speed

Ventilateurs — Classification du rendement des ventilateurs

ICS: 23.120

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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.

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

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

This second/third/... edition cancels and replaces the first/second/... edition (), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

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 currently used. There is also a belief by many that climatic change is due to an increase of carbon dioxide in the atmosphere. This has lead to many nations reviewing methods of energy generation and usage.

To maintain economic growth there is therefore a need to promote energy efficiency. This requires better selection of equipment by users and therefore better design of this equipment by its manufacturers.

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

The fan industry is of a global nature, with a considerable degree of exporting and licensing. To ensure that the definition fan performance characteristics are common throughout the world a series of standards have been developed, it is the belief of the industry that there is now a need for minimum efficiency standards to be recognised. 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 may be reviewed and increased in time.

Fans — Efficiency classification for fans —

Part 3:
Fans without drives at maximum operating speed

1 Scope

This international standard deals with the classification of fan efficiency for all fan types which have a nominal input power rating of 0,125 kW and above. This standard may be used by legislators or regulatory bodies for defining future energy saving targets. This standard applies to fans only, i.e. not including a drive, but not to the system (finished Original Equipment Manufacturer's product, e.g. box fans and roof fans or ventilation system) in which it is installed.

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.

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

ISO 5802:2003, *Industrial fans — Performance testing in situ*

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

ISO 13349:2008, *Industrial fans — Vocabulary and definitions of categories*

3 Terms and definitions

3.1
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 to entry: Fans are defined according to their installation category, function, fluid path and operating conditions (see ISO 13349).

3.2
fan size
fan size is the nominal diameter of the impeller

3.3
drives
any mechanism used to power the fan including the motor, belts, couplings, chains, transmission, VFDs, etc.

3.4
fan without drives
is a fan without drives, attachments or accessories, Figure 1

3.5
maximum safe operating speed
is the speed which the fan, can safely maintain under steady conditions and under standard air testing conditions, as defined by the fan manufacturer's prescriptions for safety and reliability.

The actual value of the maximum safe operating speed may be variable for a given fan.

3.6
optimum efficiency
maximum efficiency achieved on the fan air characteristic with all operational parameters, except the air system resistance, being fixed

3.7
fan efficiency grade (FEG)
efficiency grade for a fan without drives

4 Units and symbols

The following primary units and symbols for the parameters listed shall be used.

Symbol	Term	Unit
d	Fan size (diameter)	mm
η_{opt}	Optimum efficiency	expressed as a decimal
NOTE Efficiency in percent (%), divided by 100 equals the efficiency expressed as a decimal.		

5 General information

Fans range from the purpose built single fan to the series produced certified ranges manufactured in large quantities. A fan may be an impeller on a shaft with no drive mechanism attached (fan without drive), Figure 1.

The variation in design has led to efficiency being defined in a number of ways to suit the demands of the fan type and the market place.

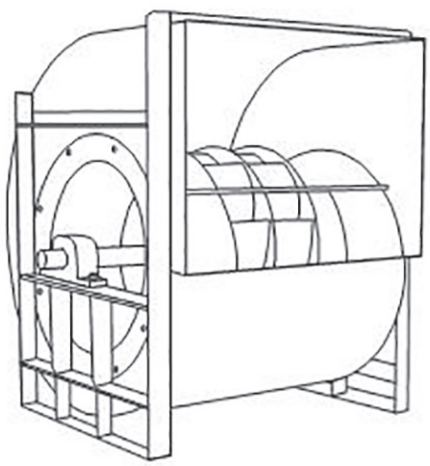

Figure 1 — An example of a fan without drive- centrifugal fan

5.1 Use of installation categories

Fan efficiency ratings are frequently specific for each standardised installation category.

