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Fans — Efficiency classification for fans —

Part 6: Calculation of the fan energy index

Ventilateurs — Classification du rendement des ventilateurs — Partie 6: Calcul de l'indice énergétique des ventilateurs

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Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms, definitions and symbols ... **1**

3.1 Terms and definitions ... 2

3.1.1 General terms ... 2

3.1.2 Impeller types ... 4

3.1.3 Fan types ... 5

3.2 Symbols ... 7

4 General ... **7**

4.1 Minimum testable configuration ... 7

4.2 FEI pressure basis ... 8

4.3 Appurtenances ... 8

4.4 Fans embedded in other equipment ... 9

5 Fan energy index ... **9**

5.1 General ... 9

5.2 Reference electrical input power ... 9

5.2.1 General ... 9

5.2.2 Reference shaft power ... 10

5.2.3 Reference transmission efficiency ... 11

5.2.4 Reference motor efficiency ... 11

5.2.5 Reference motor controller efficiency ... 12

5.3 Actual fan electrical input power ... 12

5.3.1 General ... 12

5.3.2 Measurement of fan electrical input power ... 13

5.3.3 Fan electrical input power calculation using ISO 12759-2 ... 14

5.3.4 Combined fan shaft power with tested motor or motor and controller ... 14

5.3.5 Fan electrical input power calculation for fans with motors of unknown efficiency ... 16

6 Use of FEI ... **17**

6.1 Requirements for use of FEI ... 17

6.2 Published FEI values ... 17

Annex A (normative) **Fan types, test configurations and FEI pressure basis** ... **18**

Annex B (informative) **Usage of FEI** ... **21**

Annex C (informative) **Fan arrays** ... **27**

Annex D (informative) **Practical issues with embedded fans** ... **29**

Annex E (informative) **Electrical power measurement — Calculation to other speeds and densities** ... **30**

Annex F (informative) **Basis for the reference electrical input power calculations** ... **36**

Bibliography ... **40**

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

A list of all parts in the ISO 12759 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The fan industry is of a global nature, with a considerable degree of exporting and licensing. To ensure that the defining 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 recognized.

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 in time.

This document differs from others in this series in that the fan is not evaluated at its peak efficiency value. Rather, the fan is evaluated at every duty point within its stated performance range. In doing so, this document addresses both the design and selection of fans for reduced power consumption.

The fan energy index provides a consistent basis to compare fan energy performance across fan types and sizes at a given fan duty point. This document can be used by fan specifiers to communicate fan efficiency design intent and by those selecting fans to compare the energy use of various fan options. With improvements in technology and manufacturing processes, the minimum allowable fan energy index can be reviewed and increased in time.

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Fans — Efficiency classification for fans —

Part 6:
Calculation of the fan energy index

1 Scope

This document defines the calculation method for determining the fan energy index (FEI), which is an energy efficiency metric for fan duty points. This metric provides a standardized and consistent basis to compare fan energy performance across fan types and sizes at a given fan duty point.

This document is applicable to fans driven by electric motors and fans without drives. It is not applicable to circulating fans or air curtains.

The fan energy index can only be calculated for fan duty points above a minimum air power of 125 W (where air power is the product of volume flow rate and fan static pressure) or above a minimum volume flow rate of 2,0 m^3/s.

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.

ISO 5801:2017, *Fans — Performance testing using standardized airways*

ISO 12759-1, *Fans — Efficiency classification for fans — General information for fans*

ISO 12759-2:2019, *Fans — Efficiency classification for fans — Part 2: Standard losses for drive components*

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

ISO 13349-1, *Fans — Vocabulary and definitions of categories — Part 1: Vocabulary*

ISO 13350, *Fans — Performance testing of jet fans*

IEC 60034-30-1:2014, *Rotating electrical machines—Part 30-1: Efficiency classes of line operated AC motors (IE code)*

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 60034-2-3, *Rotating electrical machines—Part 2-3: Specific test methods for determining losses and efficiency of converter-fed AC motors*

ANSI/AMCA Standard 230, *Laboratory Methods of Testing Air Circulating Fans for Rating and Certification*

ANSI/AMCA Standard 260, *Laboratory Methods of Testing Induced Flow Fans for Rating*

3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in ISO 13349-1 and ISO 12759-1 and the following apply.

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