ANSI/AMCA Standard 205-12

Energy Efficiency Classification for Fans

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AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.

The International Authority on Air System Components

ANSI/AMCA Standard 205-12

Energy Efficiency Classification for Fans

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Energy Efficiency Classification for Fans

1. Scope

This standard defines the energy efficiency classification for fans. The scope includes fans having an impeller diameter of 125 mm (5 in.) or greater, operating with a shaft power 750 W (1 hp) and above, and having a total efficiency calculated according to one of the following fan test standards: ANSI/AMCA 210, ANSI/AMCA 230, AMCA 260, or ISO 5801. All other fans are excluded. The standard only applies to the fan, not the fan drive or the fan system.

This standard can be used by legislative or regulatory bodies to define the energy efficiency requirements of fans used in specific applications.

2. Normative References

The following referenced documents shall be utilized 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.

ANSI/AMCA Standard 99
Standards Handbook

ANSI/AMCA Standard 210-07
Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Ratings

ANSI/AMCA Standard 230-07
Laboratory Methods of Testing Air Circulating Fans for Rating and Certification

AMCA Standard 260-07
Laboratory Methods of Testing Induced Flow Fans for Rating

IEEE 112-2004
Standard Test Procedure for Polyphase Induction Motors and Generators

IEEE 114-2001
Standard Test Procedure for Single Phase Induction Motors

ISO 5801:2007
Industrial Fans - Performance Testing Using Standardized Airways

ISO 12759:2010
Fans - Efficiency Classification for Fans

ISO 13348:2007
Industrial Fans - Tolerances, Methods of Conversion and Technical Data Presentation

ISO 13349:2008
Industrial Fans - Vocabulary and Definitions of Categories

3. Definitions / Symbols

For the purpose of this standard, the definitions, units of measure, and symbols in this section apply.

Definitions for fan pressures and efficiencies are found in the standards referenced in Section 2.

3.1 Definitions

3.1.1 Fan
A rotary machine that imparts energy to an air stream and by means of one or more impellers fitted with blades to maintain quasi continuous flow with a fan pressure rise that does not normally exceed 30 kPa (120 in. wg).

Note: The pressure limit corresponds approximately to a fan specific work of 25 kJ/kg.

3.1.2 Fan size
The design impeller diameter.

3.1.3 Fan drives (transmission, motor/control system)
Any device used to power the fan including motor, mechanical transmission (e.g. belt drive, coupling etc.), motor/control system (e.g. variable frequency controller, electronic commutator etc.).

3.1.4 Fan without drive
A fan with its impeller attached to a fan shaft supported by bearings. See Figure 1.

3.1.5 Fan with drive
A fan with drive. See Figure 2.

3.1.6 Air
Term used as abbreviation for “air or other gas”.

3.1.7 Standard air
The air with a density of 1.2 kg/m^3 (0.075 lbm/ft^3).