

Public Review Draft

Proposed Addendum ag to Standard 189.1-2017

Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings

First Public Review Draft (August 2019)
(Draft Shows Proposed Changes to Current Standard)

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Foreword

A Fan Efficiency Grade (FEG) requirement for fans that are used in building HVAC systems has existed since the 2013 edition of 90.1 and 2014 edition of 189.1. FEG is a metric for bare-shaft fans as products by themselves, is based on peak total efficiency, and is defined in the rating standard ANSI/AMCA 205, Energy Efficiency Classification for Fans. During a recent collaboration with the U.S. Department of Energy (DOE) on a new rulemaking for commercial fans and blowers, industry stakeholders recommended a new fan efficiency metric called Fan Energy Index (FEI), which was developed by AMCA International in their calculation standard ANSI/AMCA 208-2018.

FEI is a ratio of the electrical input power of a reference fan to the subject fan. The lower the subject fan's electrical input power, the higher the FEI rating. FEI is a wire-to-air metric that considers losses of motors, variable speed drives, belts, etc. FEI is a simple metric for designers, contractors, manufacturers, and code officials to apply and enforce because it does not have a sizing/selection window.

Energy savings will primarily result from better fan selections out of existing product portfolios rather than marginal improvements from costly fan redesigns. FEI incentivizes designers to consider whether a fan is compatible with its mechanical drive and the electric motor at all load points.

Addendum ao to ASHRAE 90.1, which contains FEI requirements proposed for Standard 90.1, is scheduled for publication in ASHRAE 90.1-2019. Under the proposed FEI-based provisions, 189.1 would require an FEI of 1.10 compared to the 90.1 value of 1.00.

[Note to Reviewers: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~strikethrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.]

Addendum ag to 189.1-2017

Add new definition to Chapter 3

fan energy index (FEI): the ratio of the electric input power of a reference fan to the electric input power of the actual fan as calculated per AMCA 208.

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Revise Section 7.4.3.6.2 as follows:

7.4.3.6.2 Fan Efficiency. The fan efficiency requirements defined in ANSI/ASHRAE/IES Standard 90.1, Section 6.5.3.1.3, shall be used, except that the ~~FEI total efficiency of the fan~~ at the design point of operation shall be 1.10 or greater within ten percentage points of the maximum total efficiency of the fan. All exceptions in ANSI/ASHRAE/IES Standard 90.1, Section 6.5.3.1.3, shall apply.

Add new reference to AMCA in Chapter 11

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