ADDENDA

ANSI/ASHRAE/IES Addendum ca to
ANSI/ASHRAE/IES Standard 90.1-2013

Energy Standard for Buildings Except Low-Rise Residential Buildings

Approved by the ASHRAE Standards Committee on June 25, 2016; by the ASHRAE Technology Council on June 29, 2016; by the IES Board of Directors on June 27, 2016; and by the American National Standards Institute on June 30, 2016.

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FOREWORD

The reduced cost, improved availability, better system control, and maintenance benefits of variable-speed technology, coupled with the associated energy savings, justifies the following updates to Section 6.5.5.2, "Fan Speed Control for Heat Rejection Equipment":

- *Lowering of the motor power threshold for the fan speed control requirement from 7.5 HP (5.6 kW) to 5 HP (3.7 kW)*
- *The inclusion of heat-rejection equipment equipped with multiple fans with a combined motor power that exceeds the new limit*
- *Elimination of the Climate Zone exception (Exception 3)*

Originally, Climate Zones 1 and 2 were exempted due to the high expected loads requiring the heat-rejection fans to operate frequently at full speed in these climate zones. However, the declining cost and many benefits of variable speed devices, coupled with the many opportunities for speed reduction even in hot/humid climate zones, justifies the inclusion of this requirement in all climate zones.

Due to the control complexities associated with condensers and fluid coolers that have multiple cooling circuits with common fans serving different systems and flooded condensers, the first two exceptions were maintained, especially as these represent a small portion of the market and operators can still use variable-speed technology if the particular system can accommodate such technology. Lastly, the same challenges with multiple refrigeration circuits served by the same fans exist for fluid cooling circuits, so Exception 1 was revised to reflect this.

[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 ca to 90.1-2013

Modify the standard as follows (I-P):

6.5.5.2 Fan Speed Control

6.5.5.2.1 ~~Each~~The fan system on a heat-rejection device powered by an individual motor or an array of motors with a connected power totaling ~~of 7.~~5 hp or ~~larger~~more shall have ~~the capability to operate at two-thirds full speed or less~~ controls and/or devices (such as variable-speed control) that shall result in fan motor demand of no more than 30% of design wattage at 50% of the design airflow and that shall ~~have controls that~~ automatically ~~change~~ modulate the fan speed ~~automatically~~ to control the leaving fluid temperature or condensing temperature/pressure of the heat rejection device.

Exceptions:

1. Condenser fans serving multiple refrigerant or fluid cooling circuits
2. Condenser fans serving flooded condensers
~~3. Installations located in Climate Zones 1 and 2~~

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Modify the standard as follows (SI):

6.5.5.2 Fan Speed Control

6.5.5.2.1 ~~Each~~The fan system on a heat-rejection device powered by an individual motor or an array of motors with a connected power totaling ~~of 5.6~~ 3.7 kW or ~~larger~~more shall have ~~the capability to operate at two-thirds full speed or less~~ controls and/or devices (such as variable-speed control) that shall result in fan motor demand of no more than 30% of design wattage at 50% of the design airflow and that shall ~~have controls that~~ automatically ~~change~~ modulate the fan speed ~~automatically~~ to control the leaving fluid temperature or condensing temperature/pressure of the heat rejection device.

Exceptions:

1. Condenser fans serving multiple refrigerant or fluid cooling circuits
2. Condenser fans serving flooded condensers
~~3. Installations located in Climate Zones 1 and 2~~

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ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

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