

DOCKETED

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Staff Supplement Variable Exhaust Flow Control

Additional submitted attachment is included below.



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March 5, 2018
Mr. Mark Alatorre, PE
Building Standards Development
California Energy Commission
1516 Ninth Street, MS37
Sacramento, CA 95814

RE: Docket Number 17-BSTD-02; Staff Supplement Variable Exhaust Flow Control (TN#-222281)

These comments are submitted by Air Movement and Control Association (AMCA) International in response to the Staff Supplement to CASE Report #2019-NR-MECH3-F by RJ Wichert submitted to the Subject Docket on January 19, 2018.

Thank you for the opportunity to submit a comment to the 2019 Title 24 docket.

Air Movement and Control Association (AMCA) International Inc. is a not-for-profit trade association with more than 380 member-companies worldwide representing more than \$3 billion in annual revenue. Member companies are manufacturers of fans, dampers, louvers, air curtains, and other air-system products for commercial HVAC; industrial process; and power-generation applications. AMCA's mission is to advance the health, growth, and integrity of the air-movement-and-control industry with programs such as certified ratings, laboratory accreditation, verification of compliance, and development of international standards.

With respect to the CASE 222196 Report Variable Exhaust Flow Control, AMCA International believes the CASE recommendation to require induced flow fans and high-plume exhaust fans to be licensed to bear the AMCA seal of the AMCA Certified Ratings Program, AMCA strongly encourages that this requirement remain in the proposed language for Title 24.

The primary reason for staff recommending withdrawal is because they did not perform a market assessment and were concerned the requirement would be unfeasible. AMCA has this information readily available.

AMCA began certifying induced flow fans since 2007, which is when AMCA Standard 26, Laboratory Methods of Testing Induced Flow Fans for Rating, was first published.

The AMCA 210, Laboratory Methods of Testing Fans for Certified Aerodynamic Performance Rating, which is used for testing most other types of fans, including high-plume exhaust fans, has been in existence for many decades, and there are many certified models of these types of products on the market, as well.

Therefore, keeping the requirement for AMCA certification will not cause a shift in the industry to certify fans that are not already being certified for the vast majority of cases. Thus, there is a minimal cost for such a requirement.



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Requiring AMCA certification, however, has many benefits, including:

- Adding confidence that the products will perform as rated, which is no small matter for equipment that is important for worker and public health and safety.
- Providing simple compliance-verification through having the seals on the products, in the manufacturers' literature submittal, and on the AMCA online database for certified products, which is searchable by license type and manufacturer.

It should be noted that being a member of AMCA is NOT required to participate in the AMCA Certified Ratings Program. Currently, more than 100 products (fans, dampers, louvers, etc.) are certified by non-members (called CRP Affiliates).

The following provides more information about the rigorous certification program for certified and high-plume exhaust fans.

AMCA-Certified Induced Flow Fans

There currently are eight (8) manufacturers that have AMCA-certified induced flow fans, which account for a total of 30 certified models, and most models have many sub-models to account for different sizes and options. Therefore, there are ample induced-flow models available in a competitive, mature *certified* market for these products

The eight manufacturers are:

- Azen Manufacturing Pte. Ltd.
- DongGuan Wolter Chemco Ventilation Ltd
- Greenheck Fan Corporation
- Loren Cook Company
- M.K. Plastics Corporation
- Plasticair Inc.
- Strobic Air Corporation
- Twin City Fan Companies, Ltd.

The following hyperlink is a direct connection to the list above on the AMCA Certified Ratings Program web page, where the specific models associated with each manufacturer can be listed and compliance-verified:

<http://bit.ly/2I3RMCK>

In AMCA 211, the following induced flow fan parameters are certified by AMCA staff:

The performance ratings of each model shall include:

- Inlet airflow rate
- Fan static pressure
- Fan input power
- Impeller speed
- Inlet air density (if other than standard air)
- Fan static efficiency (optional)
- Outlet airflow rate
- Outlet area
- Nozzle velocity (inlet airflow rate divided by nozzle discharge area)



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In addition to AMCA ensuring that induced flow fan ratings are accurate and truthful, AMCA also requires manufacturers to make the following statements in their catalogs so their ratings data have context that is important to designers:

- For single rating performance tables, fan input power may be stated for each point of rating or may be stated as the peak fan input power in the cataloged performance range.
- The following statements shall be shown immediately adjacent to the rating tables, graphs or charts and may be identified by an asterisk when appropriate:
 - “Power rating [W , kW , or bhp] does not include transmission losses.”
 - “Performance ratings do not include the effects of cross winds.”
- One of the following statements appropriate for the product being rated shall be shown immediately adjacent to the rating tables, graphs, or charts:
 - “Performance ratings do not include the effects of appurtenances.”Or:
“Performance ratings include the effects of [list appurtenances here].”

It is simple for practitioners and code officials to validate compliance for certified induced flow fans. Seals are not required to be on the equipment itself, but all certified products are listed in the AMCA CRP Database, online at www.amca.org/certified.

To find induced flow fan models, click on Search By License Type on the referenced we page, and select Induced Flow Fans from the menu of license types. The user would then select the manufacturer of the product being validated and check the models that appear on the responding page. Most model listings have links to the AMCA-approved manufacturer’s catalog for the certified product.

The seals on products or in manufacturers’ literature for an induced flow fan would be one of the two shown below, with the one on the right being used if the fan was also certified for sound performance (i.e, tested to AMCA Standard 300 and certified to AMCA Publication 311).

The seals on products or in manufacturers’ literature for high-plume exhaust fans would be one of the two shown below, with the one on the right being used if the fan was also certified for sound performance (i.e, tested to AMCA Standard 300 and certified to AMCA Publication 311).



Image courtesy of AMCA International, from Table 1. Certification types, publications, and test standards associated with the 24 products covered by the AMCA CRP, of the white paper, “An Introduction to the AMCA Certified Ratings Program,” available at no cost from www.amca.org/whitepapers.



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AMCA-Certified High-Plume Exhaust Fans

AMCA certifies high-plume exhaust fans that are not induced flow fans. These fans are tested to AMCA Standard 210, and certified for air performance to AMCA 211.

This also is a mature *certified* industry, and requirement AMCA-licensed seals would not impact the vast majority of the market.

Some manufacturers use the term “high plume exhaust” and “induced flow fan” interchangeably. Finding the number of high-plume exhaust fans that are not specifically induced flow fans would take some research, but there are at least 15 fan models from five manufacturers that are classified as “high plume” or “laboratory exhaust,” but are not induced flow fans.



Image courtesy of AMCA International, from Table 1. Certification types, publications, and test standards associated with the 24 products covered by the AMCA CRP, of the white paper, “An Introduction to the AMCA Certified Ratings Program,” available at no cost from www.amca.org/whitepapers.

Testing and Check Testing

A strong element of the AMCA Certified Ratings Program is the requirement that products be tested in an AMCA Laboratory or an accredited independent laboratory. Third-party testing adds confidence that testing data are accurate.

Additionally, AMCA requires that certified products undergo check testing every three years. In a check test, a sample is shipped to an AMCA Laboratory or an accredited independent laboratory. The sample is tested, and the resulting data are certified by AMCA staff. If the product does not meet the certified performance, the model must be re-rated or withdrawn from the program. Once the performance is proven to be unchanged over three check test cycles, the periodicity is lengthened.

The independent third-party testing and the periodic check testing provide confidence that manufacturers’ ratings for induced flow fans are accurate and truthful for the duration these products are certified. For products that are depended upon for worker and public health and safety, AMCA believes this extra are merited. And, because the AMCA certified ratings program has been in place for more than 10 years, it should not add cost to Title 24 for compliance validation.



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Title 24 Provision Language Needs Editing

Regarding the language used in the recommendation to require AMCA-licensed seals, there is a more correct way to specify such a requirement:

The exhaust fan system, including fan, nozzle, stack and wind band shall tested in accordance with AMCA Standard 210 for high-plume exhaust fans, and AMCA Standard 210 and AMCA Standard 260 for induced flow fans. High-plume exhaust fans and induced flow exhaust fans shall be licensed to bear the AMCA seal for air performance (induced flow fans) in accordance with AMCA Publication 211. ¹

These corrections account for:

- When certifying induced flow fans and obtaining the AMCA seal for induced flow fans, tests to AMCA 210 and 260 are required.
- AMCA Publication 211 specifies what parameters are to be certified; what test standards are required.

Thank you for the opportunity to comment.

Respectfully Submitted,

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¹ AMCA standards 210 and 260 are available at a nominal cost at the AMCA online bookstore at www.AMCA.org/store; and AMCA Publication 211 is available at no cost from the AMCA Store.