INTERPRETATION IC 51-1999-02 OF
ANSI/ASHRAE STANDARD 51-1999 and
ANSI/AMCA STANDARD 210-99
Laboratory Methods of Testing Fans for Aerodynamic Performance Rating

September 12, 2000

Request from: Prasad Bhatt, Cert-Aire Technical Services, Ltd., 1300 Industrial Drive, Lake In The Hills, IL 60102

Reference: This request refers to Interpretation IC 51-1999-01 of ANSI/ASHRAE 51-1999 and ANSI/AMCA 210-99 dated February 18, 2000.

Background: Mr. Bhatt cites the second paragraph of subclause 6.3.3,

> "When a measuring plane is located downstream of the settling means, the settling means is provided to insure a substantially uniform flow ahead of the measuring plane. In this case, the maximum velocity at a distance 0.1M downstream of the screen shall not exceed the average velocity by more than 25% unless the maximum velocity is less than 400 feet per minute."
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> and the following interpretations of this paragraph, provided in IC 51-1999-01:
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> (a) "The requirement must be met at all airflows during a test."
>
> (b) "The check is required at all airflows used during the test."
>
> (c) "Any combination of nozzles used during the test must be checked."
>
> (d) "The requirements must be met with the test fan operating. The control fan may or may not be operating."
>
> (e) "The standard is written to cover the requirements for a test. Since a test must cover a range of airflow rates, any requirement predicated on airflow rate, such as average velocity or maximum velocity, must be met for the full range of airflow rates. For instance, if there are eight determinations made during a test, the requirement must be satisfied for each determination. Any test utilizing equipment based on Figures 9, 10, 11 or 15 must meet the requirements for the paragraph cited in this interpretation at any and all airflow rates being measured. There is no single design airflow rate for the apparatus according to this standard. The maximum velocity referred to in subclause 6.3.3 is the maximum of the various readings across the face of the settling means during a determination."

Question No. 1: If the above requirement is to be met at all airflow determinations, is it required to conduct a qualification test for every fan test to verify compliance with 6.3.3?

Answer: Yes, except when a qualification procedure has been agreed to as noted in the General Comment, below.

Question No. 2: If the above requirement is met by conducting tests at all airflows to verify compliance with 6.3.3, is the qualification data to be reported with every fan test report?

Answer: Yes, except when a qualification procedure has been agreed to as noted in the General Comment, below.

Question No. 3: Mr. Bhatt opines that a laboratory pre-qualification test using a test fan having sufficient airflow capacity could be used as a basis for all other fans to be tested, thereby eliminating the check-test requirement for every fan at all airflow determinations. This way the total time to test fans would be within reasonable time periods. Are one-time pre-qualification tests acceptable to meet the requirements of subclause 6.3.3?

Answer: No, except when a qualification procedure has been agreed to as noted in the General Comment, below.

General Comment:

There is no provision in the Standard for general qualification of a test facility to meet the requirements of subclause 6.3.3.

The parties to a test may agree on a procedure to qualify the test facility over a range of airflows, nozzle combinations, outlet velocities of the test fan, supply fan and nozzles that meet the requirements of the standard. The parties to a test may further agree that any test performed within the qualification range of the test facility would be deemed to have met the requirements of the Standard and would not require additional checks.