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Meeting Minutes

SPC 84-1991R - Method of Test for Rating Air-to-Air Energy Recovery Ventilators

Salon J, Boston Marriot Hotel
2:15 PM, Monday, June 30, 1997

Chairman Kirk Mescher opened the meeting by circulating minutes of last meeting, followed by table introductions. (A list of attendees with phone, fax, and e-mail is available at the members-only area of the TC 5.5 site.) He then reviewed the committee's objectives and membership of the committee's three work groups. These are:

1. Group 1 - data reduction, calculations and presentation of data, prepare data sheets (revise sections 6 and 8 of existing standard)
Members - Parkash Damshala, Ben Elkin, Bob Lamuro, Bert Phillips
2. Group 2 - define the testing equipment and quality of instrumentation and prepare data sheets (revise section 5 of existing standard)
Members - Lawrence Ambs, Don Fisher, Peter Grinbergs, Kirk Mescher, Stephanie Starzec
3. Group 3 - write basic procedure and define apparatus (revise part of section 4 and section 7 of existing standard)
Members - Larry Hoagland, Byron Horak, Gerry Martin, Dale Rammien, Maury Wawryk

Moved by Gerry Martin, seconded by Dale Rammien, that the minutes be adopted as circulated. Passed (10,0,0)

It was reported that AMCA and ARI are considering the development of a test standard for packaged energy recovery ventilation devices. There was some discussion as to whether ASHRAE SPC 84-91R should develop a test standard for packaged units in any case. It was concluded that the decision should be deferred until SPC 84-91R has completed revisions to the part of Standard 84 dealing with the heat recovery component.

Professor Robert Besant passed out copies of a proposed draft standard which was developed under his auspices. He then gave an overview of changes proposed for Standard 84-91. The proposed changes are based on a thorough review of the standard as it applies to each type of equipment and the results of research done by his department at the University of Saskatchewan. His observations, comments and recommendations included:

- the existing standard had deficiencies, especially with regards to testing rotary heat exchangers,
- the standard should address three performance characteristics - effectiveness (sensible, latent, and total), airflow versus differential pressures and leakage/crossover,
- tests should include uncertainty analysis, and uncertainties should be reported along with test results. Uncertainties of 5% sensible and 7% latent were recommended as upper limits for lab tests,
- the standard should allow for both lab and field testing. Commentary on the standard should include recommendations on methods to deal with the increased uncertainty that results from field test conditions,
- the selection of test conditions for laboratory tests is very important (guidelines are given for this selection). The selection of field test operating conditions is equally important and guidelines are given for identifying the best conditions from field data,
- heat and mass balances should be done for every test. If the results do not balance within a specified limit, the test should be rejected,
- manufacturers should be allowed to estimate equipment performance by extrapolating between test points, similar to that which is done when rating fans,
- a spreadsheet can be used to check the validity of a heat exchanger test set-up and test conditions prior to running a test, and again to determine uncertainty and validity immediately upon completion of the test.

Gerry Martin circulated some information and made some recommendations, based on laboratory experience in his lab. His observations, comments and recommendations included:

- the airflow performance can be significantly affected by the pressure difference between the supply and exhaust side of a heat exchanger, especially with plate-type exchangers. The pressure differentials can also cause permanent distortion and even catastrophic failure (i.e., collapse) of heat exchanger cores. He recommended that the standard include mandatory pressure differential/airflow testing up to the pressure limit specified by the equipment manufacturer,
- cross leakage and casing leakage affect apparent equipment performance. Both the amount and direction of leakage are important which need to be determined and used when calculating heat and mass balances.

Maury Wawryk reported on ARI 1060P "Rating Air-to-Air Energy Recovery Ventilation Equipment" (available for sale at ARI's website). In April, ARI met and developed a first draft of the standard for heat exchange components (not for packaged equipment). The ARI standard applies to factory made air-to-air heat exchangers used in heat recovery ventilation equipment, but not to run-around loop systems. In the second phase, ARI will develop a certification program for components. Certification will include testing requirements which will reference ASHRAE Standard 84 as the test method. The ARI component testing procedure does not evaluate performance under freezing conditions.

Committee members broke off into work groups to work on their specific topics. Prior to adjournment, the working groups returned to the committee as a whole. Chairman Kirk Mescher asked that committee members review the existing standard and the proposed draft presented by Besant and forward comments to Larry Hoagland by September 1 who will edit them and pass them on to Kirk Mescher by October 1. Mescher will re-draft the standard based on this information.

Drawings, if any, should be submitted in Powerpoint, or as TIFs, GIFs or DFX files.

Maury Wawryk assumed responsibility for graphics. Kirk Mescher will aim to send out an agenda and the next draft of the standard to committee members by January 1, 1998, so that members may review the standard prior to the meeting in San Francisco.

Moved by Kirk Mescher, seconded by Gerry Martin that the units format in the revised Standard 84 be SI (IP). Passed (10,0,0)