

**ASHRAE Winter Meeting Minutes  
TC 5.2, Duct Design  
Tuesday, 22 January 2007  
3:30 – 6:00 PM  
Hilton Hotel (Gramercy B)**

**1. Call to Order (Chairman Brad Thomas)**

- Meeting was call to order and introductions made.
- Five of ten voting members were present (see Table 1). The International Member (IM) was not counted.
- Long Beach meeting notes approved by voice vote.

| <b>Table 1</b> |                      |                |               |
|----------------|----------------------|----------------|---------------|
| <b>No.</b>     | <b>Name</b>          | <b>Present</b> | <b>Absent</b> |
| 1              | Brad Thomas          | P              |               |
| 2              | Johnny Anderson (IM) |                | N             |
| 3              | Pat Brooks           | P              |               |
| 4              | Richard Evans        |                | N             |
| 5              | Ricardo Gamboa       |                | N             |
| 6              | Kevin Gebke          | P              |               |
| 7              | Eli Howard           |                | N             |
| 8              | Steve Idem           | P              |               |
| 9              | Vernon Peppers       | P              |               |
| 10             | Tom Ponder           |                | N             |
| 11             | Walter Ziemann       |                | N             |

**2. Section Head Report**

- An ASHRE Research Advisory Panel is being formed at the New York meeting to update the Research Strategic Plan.
- The USGBC (U. S. Green Building Council) announced a \$2 Million commitment to fund green building research, and issue a Request for Proposals (RFP). The USGBC is reserving \$500,000 for “K-12 school facility research related to occupant impacts”.  
USGBC is accepting pre-proposal abstracts from February 12<sup>th</sup> through March 6<sup>th</sup>, 2008. Selected applicants will be asked to submit comprehensive proposals for the final phase of the selection process. Much more information is available from <http://www.usgbc.org/News/PressReleaseDetails.aspx?ID=3584>
- Advanced Energy Design Guides are available for free download (PDF) from ASHRAE’s Web site (ASHRAE.org). Energy design guides are
  1. K-12 School Buildings
  2. Small Retail Buildings
  3. Small Office Buildings
- George C. Hightower Technical Achievement award went to Howard Mc Kew of TC 9.1.
- Professional Development Committee (PDC) (Liaison: F. Mendez)

- a. PDC is working on a Short Direct Learning (SDL) course for Air System Design (SDL-8), and would like TC 5.2 members to review the Duct System Design chapter or the entire document.
- b. Each chapter (Table 2) is a Power Point presentation.
- c. Manuscript can be obtained from Tino Mendes (405-607-6131 or email below)
- d. Send comments to Mr. Mendez ([tino.mendez@benham.com](mailto:tino.mendez@benham.com)).

| <b>Table 2</b> |   |
|----------------|---|
| <b>Chapter</b> | <b>Title</b>                                      |
| 1              | Fundamentals of Air Flow                          |
| 2              | Air Distribution System Components                |
| 3              | Human Comfort and Air Distribution                |
| 4              | Relationship of Air Systems to Load and Occupancy |
| 5              | Exhaust and Ventilation Systems                   |
| 6              | Air Movers and Fan Technology                     |
| <b>7</b>       | <b>Duct System Design</b>                         |
| 8              | Codes and Standards                               |
| 9              | Air System Auxiliary Components                   |

**3. Handbook Chair Report (Vernon Peppers)**

- 2008 Systems and Equipment Handbook should be published in 4 months.
- Draft of the Duct Design chapter for the 2009 Fundamentals Handbook to be completed for approval at the June (Salt Lake City) meeting. Main areas of focus are:
  - (1) Flexible Duct
    - a. Add flexible duct equations as requested by Bass Abushakra.
    - b. Flexible duct lengths should be limited to 5 feet or less for any system (residential, commercial)
    - c. Maximum 4% compression
    - d. Offset limited per research by Herman Behls
  - (2) Duct Leakage
    - a. Table 5: For the Pittsburgh Lock clarify if mastic is put into the seam during manufacture or if no mastic.
    - b. Table 8A: Make same as the 2007 Duct Construction chapter.
- Deadline for handbook submittal to Handbook Committee Liaison (Bill Coad) is July 9<sup>th</sup> 2008.
- Changes to CD+ are on going and can include videos, spreadsheets, and other media not represented well in text.

**4. Membership Chair Report (Steve Idem)**

- 5 voting members in attendance (need 6 for quorum).
- Voting Members to be added to 2008-2009 roster:
  - a. Bass Abushakra
  - b. Herman Behls
  - c. William Elosh
- Corresponding Members to be added to 2008-2009 roster:
  - a. Marcus Bianchi
  - b. Wesley Davis
  - c. Michael Resetar

- d. Chris Van Rite
- e. William Stout
- 2008-2009 Handbook Chair: Chris Van Rite
- 2008-2009 Secretary: William Elosh

#### 5. Programs Chair Report (Steve Idem)

- No programs planned for Sault Lake City (June 2008).
- Transactions Session planned for Chicago (January 2009). Papers are based on the following ASHRAE research.
  - a. 1319-RP, Laboratory Testing of Duct Fittings (Flat Oval Elbows) to Determine Loss Coefficients (Tennessee Technological University, Dr. S. Idem)
  - b. 1333-RP, HVAC Duct Efficiency Measurements (Texas A&M, Dr. C. Culp)

#### 6. Computer Programs

- T-Duct (Author: Vernon Peppers)
  - a. Pat Brooks, Herman Behls and Brad Thomas will continue to test.
  - b. Other interested parties contact Herman Behls ([hbehls@sbcglobal.net](mailto:hbehls@sbcglobal.net)).
  - c. Procedure to download T-Duct (65 MB) is as follows:  
[WWW.T-DUCT.COM](http://WWW.T-DUCT.COM)  
 Select Beta Test  
 Fill In Form  
 User Name: TC52User (case sensitive)  
 Password: TC52User (case sensitive)
  - d. Recommended that T-Duct should earn LEED points.
- ASHRAE Duct Fitting Database (DFDB)
  - a. Latest version is 4.0.3.
  - b. All DFDB inquires have been resolve and incorporated into Version 4.0.3.
  - c. All those that have DFDB can update by <FILE>, <UPDATE>.
  - d. Flat oval easy and hard bend elbows will be add to DFDB upon completion of 1319-RP. Will happen prior to the June meeting.

#### 7. Research (Herman Behls)

- 1319-RP, Laboratory Testing of Duct Fittings (Flat Oval Elbows) to Determine Loss Coefficients (Tennessee Technological University, Dr. S. Idem)
  - a. Project is complete.
  - b. Technical paper will be presented at the Chicago meeting (January 2009).
- 1333-RP, HVAC Duct Efficiency Measurements (Texas A&M, Dr. C. Culp)
  - a. Final report to be submitted to TC 5.2 for review prior to the Salt Lake City meeting (June 2008).
  - b. Technical paper will be presented at the Chicago meeting (January 2009).
  - c. Main conclusions:
    - c1. If flexible is under tension (0% compression) the pressure drop is similar to rigid round duct (slightly greater).
    - c2. At 4% compression (best case in field applications) the pressure drop doubles from 0% compression.
    - c3. The pressure drop increases drastically as compression increases
- 1180-RP, ASHRAE Duct Design Manual

- a. Farnsworth Group defaulted on their contract. Copyrights have been released to ASHRAE.
  - b. Herman Behls received Farnsworth draft materials from ASHRAE.
  - c. TC 5.2 committed to completing the Duct Design Manual at no cost to ASHRAE. A working session will be scheduled for Monday morning (6/23/08) at Salt Lake City.
  - d. Approximately \$7,000 remains for graphics and artwork.
  - e. Sub-Committee members are Pat Brooks, Chair; Herman Behls, Payton Collie (SMACNA), Charles Culp (Texas A&M), Wes Davis (ACCA), Richard Evans, Kevin Gebke and Chris Van Rite (ADI).
- 1488-TRP, Laboratory Testing of Duct Fittings (Flat Oval Junctions) to Determine Loss Coefficients
    - a. Approved by RAC.
    - b. Project to be bid spring of 2008.
  - 1526-URP, ASHRAE Duct Design Manual (University of Kansas Center for Research, University of Kansas, Dr. B. Rock)
    - a. The objective of the research is to create a new, practical book that will help inexperienced HVAC designers and engineers to create efficient air duct systems. The fundamental guide will include numerous graphics, photographs, and examples to increase its effectiveness.
    - b. The cost of the proposed research is \$107,315.
    - c. URP-1526 was rejected 5-0-0 (10) because the research duplicated the work of 1180-RP. The meeting did not have a quorum; therefore the balance of TC 5.2 voting members will be letter balloted (Rich. Evans, Ricardo Gamboa, Tom Ponder, Eli Howard, and Walt Ziemann). Ballot emailed 9 February 2008.
  - 1369-WS, Design Guidelines to Prevent Snow Causing Shutdown of HVAC Systems
    - a. RTAR approved conditionally 26 October 2005 by RAC.
    - b. Work Statement prepared by Larry Markel (RAC member) with Scope of Work to be provided by TC 5.2.
    - c. Work Statement to be Letter Balloted prior to 5 May 2008 so that RAC will have for review at the Salt Lake City meeting.
  - 1493-RTAR, CFD Shootout Contest – Prediction of Duct Fitting Losses
    - a. RTAR returned from RAC 13 July 2007 with five comments. One of the comments was to have Dr. Spitler review.
    - b. Dr. Spitler's review comments were resolved and he supports the revised RTAR. Mr. Kohloss, RAC Liaison, also supports the RTAR.
    - c. The revised RTAR and responses to RAC comments were sent to the Manager of Research 8 September 2007.
    - d. The RTAR fell through the cracks and was not reviewed by RAC at the New York meeting. The RTAR is scheduled for review at the RAC's spring meeting.
  - RTAR for Loop Air Systems
    - a. Mr. Graves, Graco Mechanical (Houston), presented the history of "Duct Loop" systems at a previous TC meeting. A paper he prepared 3 July 2007 includes "Duct Loop Economics."

- b. By voice vote the TC approved the preparation of an RTAR. Herman Behls volunteered to write.

## **8. Standards**

- SPC 120, Method of Testing to Determine Flow Resistance of HVAC Ducts and Fittings: As of 12 November 2007 being prepared for Public Review by ASHRAE's staff.
- SPC 126, Method of Testing HVAC Air Ducts: Approved by the Board of Directors at the New York meeting. Awaiting approval by SMACNA.
- SPC 189.1, Design of Green Buildings Except for Low High-Rise: Title, Purpose & Scope (TPS) went to the Board of Directors for approval at the New York meeting. Expected to go out for the second Public Review 22 February 2008.
  - a. The leakage portion of Standard 189.1 should be reviewed by TC 5.2. Note: This can be done during the Public Review expected 22 February 2008.
- Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings: Herman Behls to submit form proposing the duct leakage requirements be changed to be in compliance with the Duct Design chapter and Duct Construction chapter.

## **9. Unfinished Business**

- None.

## **10. Webmaster**

- New webmaster is Kevin Gebke.

## **11. New Business**

- Flexible Duct "Calculator"
  - a. The flexible duct calculator was developed by ADI (Air Diffusion Institute), and is similar to both the Trane Ductulator and the SMACNA HVAC Duct Design Calculator.
  - b. ADI calculator has windows for several levels of flexible duct compression (4%, 15% and 30%). This calculator shows that flexible duct must be several sizes larger than rigid galvanized ducts for the same flow, length and pressure loss.
  - c. The purpose of the flexible duct calculator is to encourage limiting flexible duct to minimum lengths. At 4% compression (best case in field applications) the pressure drop doubles from 0% compression.
  - d. The ADI representatives expressed a desire to have ASHRAE logo on the calculator and market through the ASHRAE Bookstore. The ADI representatives were encouraged to present their ideas to W. Stephen Comstock, Publisher/Director of Publications and Education.
  - e. If ASHRAE approves most likely the Calculator would be sent to TC 5.2 for approval.

## **12. Awards**

- Nominee for George C Hightower Technical Achievement award was unsuccessful.
- No person nominated for the Hightower award.

## **13. Action Items**

- None.

#### **14. Adjourn**

- Motion to adjourn at 6:00 PM approved by voice vote.