New Testing Facility In Hawaii

In October, a water board and air rig was assembled by our Hawaii firms. Thank you to Air Balance Hawaii and Pacific Test & Balance for volunteering their time and parts to get the test rig completed. We conducted our first ever Hawaii NEBB Technician test on October 16th with seven (7) candidates taking the written and practical exam. All Hawaii Certified Professionals also volunteered their time to go thru training with the Chapter’s Technical Committee Chair, Steve Smith on administering and grading the test.

NEBB Specifications Can Now Be Downloaded from Website!

NEBB specifications for Test, Adjusting and Balancing (TAB), Building Systems Commissioning (BSC), Sound & Vibration (S&V) and Cleanroom (CR) are now available on our website for download in Word. Log onto www.nocalhawaiinebb.org and click on Specifications on the bottom of the home page.
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Hi all! It’s that time of year again. We just got back from the annual meeting. It was in Florida—nice hotel but as usual, too far away from civilization for my blood. Florida was nice despite a day or 2 of less than great weather. And for me – not being a golfer, I thought the fishing trip was a great new addition to the annual meeting event calendar. Hope that one becomes a regular. I know it is scheduled for next year’s meeting in Savannah, Georgia. While the annual golf outing is not scheduled at Hilton Head, some of you may take interest in the fact that it is less than 30 minutes away!

The meeting itself was good with lots of technical content. So much so that you couldn’t attend every session. I for one actually consider that to be a good thing. Hopefully for those of you that went you filled out the survey. Improvements will not come without feedback from the people that the meeting is intended to help.

There is much talk about the technician test – and whether there will be a hands-on exam. There will be official word coming from National, but for now I will tell you for a fact - there will be no hands-on test for the technician. It is an online written only test. I feel the rationale behind it is at least in principal, sound. The reasoning is that it is going to be tough for all the TAB Technicians to make it through the program and be certified by January 1, 2012 (a date that is looming just over a year away!!). This will make it easier for the technicians to test and pass since there is only one test and scheduling well be simpler. The assumption is that if they can pass the written, they have already been in the field and the hands-on test is more a formality. The Certified Professional will be required to sign off that his technicians are proficient. That sign off can be used if a problem gets escalated to the QAP to discipline the Certified Professional. There have been many arguments for and against, and hopefully the final decision ends up in the best interest of NEBB.

Speaking of arguments. I just spent 6 hours in a review meeting to review the annual recertification reports. Come on guys and gals. You all know what we have to do. Please send us pictures that we can read. Use a decent camera, hopefully one with a macro function. If we can’t read the numbers on the tools we can’t verify the tools in the picture match the calibration certifications. One thing that came out of this review was that having to review some reports was a good learning experience for the reviewers. Since we intend to continue having a technical review committee for this process in the coming years, I would suggest that for anyone wanting to become more informed about the process and the required content of reports, please volunteer for that committee. It only meets annually to review reports, and is not a huge commitment.

Along that same topic, the current version of the procedural standard for testing adjusting and balancing is under rewrite. I have been told in no uncertain terms that the tool calibration requirements will be reverting to the requirement that ALL tools will require calibration versus having one set of calibrated tools and comparing other tools to that calibrated set.

I sign off now wishing you all well in the coming year. Please remember, the work you do speaks for NEBB’s reputation and directly affects your ability to obtain future work.
DISCUSSION
For the purpose of this report a dry data centers is defined as one that does not contain any water or refrigerant within the server space. This investigation explores the characteristics of the interior room without specifically addressing the exterior of the data center. A few comments about the systems exterior to the data center are warranted.

Exterior Characteristics of Dry Data Centers
There are an infinite number of ways to achieve a successful dry data center. Typically they will be located in a single-story building. The reason for this requirement is that the cooling equipment in these facilities is usually roof-mounted and there is not enough room for roof-mounted equipment to serve a densely populated data center that covers more than one story. One great advantage of roof-mounted equipment is that outdoor air for an economizer is readily available.

The piping distribution systems to and from the coils within the equipment are also installed above the roof. This is an obvious requirement for a dry data center and it carries some distinct advantages and disadvantages. The major advantages include obviating leak detection, floor drains, and the requirement for mechanical service access within the server space. The major disadvantage is the requirement for extensive freeze-protection of all piping systems if the building resides in a colder climate. Insulation costs are also higher for exterior as opposed to interior piping systems.

The air distribution systems must also take up some of the roof area. Most data center designs, whether dry or not, make use of supply and return plenums at some level. Dry data centers are no exception especially given the layouts in Figure 1 and Figure 2 above where the supply chases are at the ends of the room.

Note that the roof becomes quite densely populated with mechanical components now that equipment, piping, and some of the duct are all situated there. The roof structure needs to be robust enough to carry this weight and must be coordinated well to allow for adequate service accessibility. A dry data center like this would generally have to be laid out before the building is constructed. A retrofit application would very likely behoove the owner to replace the roof in addition to upgrading the columns and foundations.

Interior Characteristics of the Simulated Dry Data Centers
The geometry of the data center interior modeled in this report is close to a worst-case scenario as far as delivering air to the most remote servers is concerned. The dimensions of the hot and cold aisles as well as the servers themselves are generally the smallest acceptable for data centers with standard loads. The loads used in Case A and Case B are over ten times greater than most data centers. Note that a raised floor supply air plenum in lieu of the sidewall chase supply air plenum modeled in this report would perform much better in terms of air delivery.

RESULTS
The results for Case A (5,715 Watts per equipment square foot / 2,400 Watts per room square feet) at an elevation of 6-feet (183-cm) above the finished floor are shown in Figure 3 below.
Figure 3: Case A Temperature and Velocity Vector Distribution

Velocity Concentration at Cold Aisle Entry Points = 5,000-fpm (25 m/s)

Contained Hot Aisles at Uniform Temperature Throughout

Cold Aisles at Uniform Temperature at All Elevations Throughout
The results for Case B (10,000 Watts per equipment square foot / 4,200 Watts per room square feet) at an elevation of 6-feet (183-cm) above the finished floor are shown in Figure 4 below.

**Figure 4: Case B Temperature and Velocity Vector Distribution**

- Velocity Concentration at Cold Aisle Entry Points = 9,000-fpm (46 m/s)
- Contained Hot Aisles at Uniform Temperature Throughout
- Cold Aisles at Uniform Temperature at All Elevations Throughout
CONCLUSIONS
The results of this investigation support the following conclusions:

- A dry data center can satisfy the cooling load even under heavy loading and disadvantageous indoor geometry.
- Localized cooling will alleviate the velocity concentrations at the entry to the cold aisles.
- Increasing the width of the cold aisles and hot aisles will also alleviate the velocity concentrations and still maintain a dry data center.

REFERENCES


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This last month on September 16, 2010 we had a first of its kind technician test in Hawaii. We were able to give the complete test to seven of Hawaii’s technicians. The following technicians joined us: Certified Testing (Kevin Chong), TAB Engineers, LLC (Derrick Tomasa, Steven Cegler, Martin Heede & Jason Moore) and from Pacific Test & Balance, Inc. (PTB) (Brad Bannister & Jeff Kitt). In addition to giving the test, Audrey and I trained Ryan Chang (TAB Engineers, LLC), Doug Buote (Certified Testing), Peter Hiroshima and Carey Tomasa (Air Balance Hawaii) and Jason Huffman (Pacific Test & Balance, Inc.) as proctors. Ryan Chang is already an approved National proctor but participated in the training anyway.

Audrey and I have been talking about giving the test in Hawaii for years to reduce the hassle of sending the technicians to California. Hawaii NEBB members have been very proactive in trying to get their technicians certified ahead of the National transition schedule. The participating companies, Certified Professionals (CP) and technicians were extremely accommodating in putting the test on. As we have experienced and testing records show, many of us have been in the field for years and become somewhat complacent when it comes to our technician/CP testing. As such, many do not pass on their first try when they anticipated it would be a “piece of cake”. But, all walk away with a much greater appreciation and typically will pass that last part the next time.

We started off Saturday morning in Air Balance Hawaii’s great office which just happened to be by the best morning breakfast place in Hawaii, Leonard’s. Leonard’s is known for their Malasadas which is a Portuguese donut. Try the Haupia (coconut) filled one. Yum!!!! Great way to start off the test, getting wired on sugar and coffee.

Anyway, Carey and Peter invited us to their office that was nicely air conditioned which is even needed at 8:00 a.m. in Hawaii to all of you that have not been there yet. After several hours of testing and grading enjoyment by all our proctors, we split off to take the practical. Yes, I said practical. That is where Carey Tomasa, Doug Buote and Jason Huffman stepped up and made it happen. Carey had started a water board many years ago but never completely finished it. Carey and Jason came up with the parts, then Doug and PTB technicians put together a very functional test board. The board was built to be disassembled by the Hawaii companies to practice at their own offices if needed. The NoCal/Hawaii NEBB board approved a small budget to build the testing facilities and we were able to stay at 70% of the budget. The water board is primarily built on uni-strut and of plastic pipes but there was B&G, T&A and Griswold FMS to work with. With a few extra parts, we even installed a clear site glass to show how a Griswold can stay constant flow as the system is fluctuated along with showing the air bubbles as a system was first filled to achieve high point pressure at a gauge next to the automatic relief.

Then there was the airside. That was the harder test rig to make. Critchfield Pacific, Inc. (CPI) donated space in the piping shop to build a temporary air system with 3 branches and 5 registers (like our local test rigs) on a borrowed 4 ton system. CPI really came through by donating the ductwork, loaning the ACU, registers and practical testing facility along with building the HVAC system for us. Thank you CPI!!!! And thank you Hawaii members!!!! All Hawaii CP’s stepped up and helped make this test happen.

The practical took us 2 days (Sat. & Sun) and 2 nights (Mon. & Tues.) but it was all worth it having the Hawaii technicians getting a chance to make a big start on getting certified before the deadline. Not all the Hawaii technicians tested but a huge percentage did and many are on their way. Hopefully we will be able to do this again in another 6 months and see if we can get all the technicians, if not the majority, complete in their certification. But there are changes in the testing procedures now. More to come.

National Convention Update – The practical is no longer required for technicians. The written test for technicians is now one part and not three. So, if you need to retake one part, you will need to take the complete written exam over. My experience in teaching has shown that combining the parts creates an average in the applicants favor. This has been a long time coming. This may have been a favorable change for Hawaii if we knew about it prior to testing but we have been waiting for the change for several years and Hawaii’s proactive nature to address the technician’s certification warranted the test. On the plus side, Hawaii now has a functioning water board to practice with.

Mahalo Hawaii NEBB members!!!
Air Balance Hawaii located in Honolulu, Hawaii, first opened their doors in 1991. At that time, Carey Tomasa was not only the owner but the sole employee. Carey originally started as an AC/refrigeration mechanic. He attended Honolulu Community College’s Refrigeration and AC program. After working for some smaller firms, he went to work for Pepsi Cola as a refrigeration mechanic. He reached a point in his career for Pepsi Cola where he felt he had gone as far as he could go and made the decision to leave. He went to work for Certified Testing as a TAB technician, taking a huge pay cut. In the end, it was the best decision he ever made. He worked for them from 1985 to 1991 when he decided to open his own business. That first year was a difficult year as he had no experience running a business and was learning as he went. The following year went better and in 1993 he hired on his first employee, Peter Hirashima, NEBB Certified Professional.

Air Balance Hawaii is an old school Testing, Adjusting and Balancing (TAB) firm that has been in business for 19 years. Currently they employ 2 certified professionals, 5 technicians and 2 office assistants, Kelly and Kathy. Kelly handles the scheduling, billing and administrative work and Kathy, who is also Carey’s spouse, handles HR as well as administrative duties.

Eighty-five percent (85%) of their work is through mechanical contractors with seventy percent (70%) of their projects being Federal State. They have been selective over the past 5 years and have narrowed down their construction related work. They do a lot of plan and spec work and feel that their work load is more than sufficient for everyone to stay busy.

They have had some success with commissioning with the LEED push. About thirty percent (30%) of Carey’s responsibilities is commissioning jobs. NEBB certification has made a difference for Air Balance Hawaii in get-
ting commissioning jobs. Their first LEED Cx project was in 2003 and Cx projects seem to be negotiable work for the most part.

Carey Tomasa first became NEBB TAB certified in 1994, following that up with his Sound & Vibration certification in 1997 and then his Building Systems Commissioning certification in 1999. Carey spends most of his time in the office, occasionally going into the field if needed. Carey felt it was proper for his firm to have a certification and NEBB seemed the natural choice. Air Balance Hawaii was the second NEBB certified company in Hawaii.

Peter Hirashima has extensive background doing balancing work first starting in 1978 with Johnson Controls and then owning his own balancing firm. He became NEBB certified in 2000. Peter works mainly in the office with occasional field work when required.

Most projects these days require a certified firm and in Hawaii, NEBB is the most prominent. With the NEBB certification there rarely is a project that they don’t qualify for. Air Balance Hawaii has been around long enough to present NEBB as the island’s industry leader. They believe that their customers realize that a reputation of quality work is worth any inconveniences to complete the TAB portion of the project.

Air Balance Hawaii is extremely proud of their work force and their understanding of what a little extra does for the company. As they are old school they expect extra support when necessary to meet deadlines and the employees don’t hesitate to make it happen.
2010 National Annual Meeting in Florida

The NEBB Annual Meeting was held in Bonita Springs, Florida on November 4-6, 2010. New this year was the addition of one extra day of technical sessions. Thursday, November 4th started off with a welcome from our NEBB President Steve Wiggins. As in the past, NEBB presented a check to the ASHRAE President of $10,000 to go towards ASHRAE research. The Opening Session was followed by Open Committee meetings which all were invited to attend. This forum is the perfect spot to get any questions answered and to find out what new is happening with NEBB.

ON-LINE TESTING: We were presented with the new on-line testing for Technicians and Certified Professionals. The technicians exam is available now as an on-line only written exam. This exam will be given on an on-demand basis. To set up a test, contact the local Chapter Coordinator. The Certified Professional test is ready to go and will roll out for the March 2011 exam.

CHAPTER AFFAIRS COMMITTEE: All Quality Assurance Program (QAP) cases sent to the Chapter Affairs Committee for resolution were resolved to the owner’s satisfaction. Every firm involved settled all problems on a timely basis and without any outside assistance needed.


Next year’s meeting will be from October 19-21, 2011 in Savannah, Georgia. Be sure to mark your calendars and plan on attending.

2011 Re-Certification Chapter Meeting Is Set!

Our 2011 Chapter Re-certification meeting will be held on Tuesday, May 17, 2011 at the Newark Hilton Hotel. This will be a change from the 2 semi-annual meetings to one all day meeting. The Education Committee is busy getting speakers and vendors lined up for this seminar. *Mark your calendars and keep an eye out for more information and registration.*