

ASHRAE

Hawaii Chapter

HE EA MAKAMAE

A monthly publication by the American Society of Heating Refrigerating and Air Conditioning Engineers, Inc.

SY 2010-11, Issue #7 HONOLULU, OAHU, HAWAII Feb 2011

PRESIDENT'S MESSAGE – Michael Chang

Aloha ASHRAE Ohana,
Looking forward to seeing you at the Technical
Seminar and Product Show at the University of
Hawaii East West Center.
Mahalo,
Michael



Chapter Officers – Society Year 2010 to 2011


President: Michael Chang
President-Elect: Paul “Scotty” Scott
Vice President: Kevin Saito, P.E. LEED AP
Secretary: Barry Jim On, P.E.
Treasurer: Paul Fukunaga, P.E.

Chapter Board of Governors

Blake Araki, P.E.
Albert Hahn, P.E. (Immediate Past President)
Donna Kishi
Scott La Beau
Bill Lee, P.E.
Dr. Melek Yalcintas, P.E.

Chapter Chairperson

Attendance and Reception: John Lau
Technology Transfer: Paul “Scotty” Scott
Programs: Blake Araki, P.E.
Government Affairs: Barry Jim On, P.E.
Refrigeration: Scott La Beau
Technology: Herman Siu
Energy Awards: Bill Lee, P.E.
Historian Joseph Ting, P.E.
Memberships Promotions: Roland Suzuki
Newsletter Editor: Kevin Saito, P.E. LEED AP
Research Promotions: Archibald Makatini
Product Show: Donna Kishi
Technical Seminar: Dean Borges
Student Activities : Alayna Shima
Young Engineers of ASHRAE: Brandon Maeda
Webmaster: Mark Yamamoto, P.E.

Mar 2011						
SUN	MON	TUE	WED	THU	FRI	SAT
		1	2	3	4	5
6	7	8	9	10	11	12
					Hawaii Chapter Technical Seminar and Product Show	
13	14	15	16	17	18	19
						
20	21	22	23	24	25	26
				Chapter BOG Meeting		
27	28	29	30	31		

Announcements:

- ✓ **Nominations for Energy Projects are needed (contact Bill Lee)**
- ✓ **Tech Seminar and Product Show: March 11, 2010 (East-West Center at UHM Campus)**
- ✓ **Job Openings at Coffman Engineering and Bowers + Kubota Consulting (see Employment Opportunities tab on Chapter web page.)**

Next Board of Governors Meeting:

Date: 24 Mar 2011 (Thurs)

Time: 11:30 am

Location: 1132 Bishop Street, Suite 1800 (Hawaii Energy Offices)

Treasure Hunt!!!



The Chapter is looking for the oldest:

- *Consulting engineering firm.*
- *Installed controls system*
- *Installed AC system*
- *Longest ASHRAE membership in Society/Chapter*

From the Editor

It's March so it must mean time for March Madness...so do you feel lucky?

It's so easy to sit down and complain others have all the luck. Luck is whimsical and capricious so we can blame it endlessly when things don't seem to be going our way. When we see others with wildly successful jobs and endless money, are we guilty of thinking luck somehow favored them more than us? Or do we give credit when credit is due? Did they work harder, sacrifice more, do without more than we?

In my search for a quote this month, Jefferson probably stated it best so I started thinking about how I viewed hard work and success. Certainly hard work is an important factor to increasing your odds of success but it can't be all that there is to success. Isn't part of the equation "work smarter" or "work more efficiently"? Doesn't how we work contribute as much to our success as how many hours we put in?

Because of my engineering training, I maximize the output and attempt to minimize the input. Not to say I'm lazy but I've noticed there are resources that can help me do my work better, faster, more efficiently so I can produce more of what I need to produce. The ASHRAE Tech Seminar and Product Show may be a resource that will help you work smarter and produce your own luck. Do you feel luckier now? Do you?

Kevin Saito, P.E. LEED AP

***"I am a great believer of luck,
and I find the harder I work, the
more I have of it."
- Thomas Jefferson.***

Upcoming Chapter Meetings:

14 Apr - The Willows, 5:30pm (Student Membership Night)

12 May - The Willows, 5:30pm (Research Promotion Night)

9 Jun - Outriggers Canoe Club in Waikiki, 5:30pm (Installation Night)



Upcoming BOG Meetings:

(1132 Bishop Street, Suite 1800
Hawaii Energy Office at 11:30 am)

24 Mar 2011

28 Apr 2011

26 May 2011

23 Jun 2011



2011 Technical Seminar and Product Show

“Controls As It Relates to Operation and Maintenance”

It is one seminar, which you should not miss, because it has been perceived that the greatest weakness of most HVAC&R consultants and contractors in the construction industry is “Controls”. To strengthen your weakness in HVAC&R engineering, you should attend this seminar, which you have been waiting for years. Moreover, come and meet in person the *Society President-elect Ronald Jarnagin*, who will be the Keynote Speaker and our next ASHRAE President for SY 2011-12.

Registration Fee for Technical Seminar:

- Members \$125
- Non-member \$150
- Student \$5
- Parking Pass (next to East-West Center) \$5

Each seminar attendee / product show exhibitor is entitled to one lunch ticket plus refreshments for two coffee breaks including admission to happy hours. You can purchase additional lunch & coffee breaks for \$25.



PRODUCT SHOW – Free Admission!

Sponsors for Lester Nakata Memorial Fund:

Platinum \$1000 or more, Gold \$300-\$999,

Silver \$100-\$299 or Bronze \$99 or less

Workshop #1 – Sequence of Operations – “Basis of what should be” with *Philip Smith*

It will be an engaging discussion of a sequence of operations from a design perspective, and how they may be adapted to cover more than just standard equipment operation. Philip will cover topics such as sequence basics, power outage recovery, equipment self-test, and fault detection. This presentation will provide you with a broader view of the sequence of operations for equipment and buildings.

Phil Smith has been a Product Manager at Alerton for over 4 years and works on many products in the Alerton portfolio including software and hardware. Phil is currently working on the Alerton Energy Dashboard among other projects. Phil holds a bachelor's degree in marketing and management from the University of Washington and resides in Seattle, Washington. Personal hobbies include classic cars, running, and electronics.



Workshop #2 – “Use of Control Systems During Operations and Maintenance” with *Jay Garbarino, P.E.*

It will be an engaging discussion of monitoring based exception reporting to detect problems for early response and graphical system performance visualization tools.

Jay is the US Sales Manager for Delta Controls. After graduating from the University of Colorado, College of Engineering and Business, Jay started his controls career with Johnson Controls Inc. branch in Los Angeles. His roles included: engineering, project management, construction and service sales, energy services, sales management and branch management in 4 different western locations.



Workshop #3 - “Field Implementation of HVAC Commissioning in Hawaii, Panel Discussion

Moderation by our own Hawaii Chapter President Mr. Michael Chang and panelist:

- ***Keith Chan, P.E.***, Mechanical Engineer, President of Notkin Hawaii Inc.
- ***Ross Sasamura, P.E.***, Mechanical Contractor, Vice President, Operations with Heide and Cook Limited
- ***Gilbert Talavera***, Owner Representative, Project Manager with U.S. Army, Division of Public Works
- ***Rudolph J. Ritter***, Controls Contractor, Contracting Solutions Manager with Trane Pacific
- ***Dan Kreitz***, Controls Contractor, Quality Controls Manager with Johnson Controls Inc.

Join in the discussion at the East West Center – Keoni Auditorium on the Campus of the University of Hawaii at Manoa, starting at 7:30 am with continental breakfast, workshops and about a dozen of manufacturing representatives having over 30 different HVAC&R product displays.

Admor HVAC

- Rheem, Fujitsu, Hart & Cooley, Pennbarry

DMG Hawaii

- AAON, Air Monitor Corp., Energy Labs Inc., Int'l Environmental Corp., Heat Pipe Corp.

Emerson Network Power (Power Protection Systems)

- Liebert Computer Room Air Conditioners, Power Conditioners

Engineered Systems Inc.

- Paco Pumps, Grundfos Pumps, Cleaver Brooks Boilers, PVI Water Heaters
- Laars Water Heaters, Etech

International Coating AC

Mitsubishi Electric & Electronic

Starr and Company

- Quincy Compressors, Bryan Boilers, Miura Boilers, Weinman Pumps

Johnson Controls Inc. / York International

Joseph H. Schauf Inc.

- Baltimore Air Coils

Norman S. Wright

- Greenheck, Ruskin, Danfoss, Marley Towers, Daikin, McQuay

Trane / Ingersoll Rand

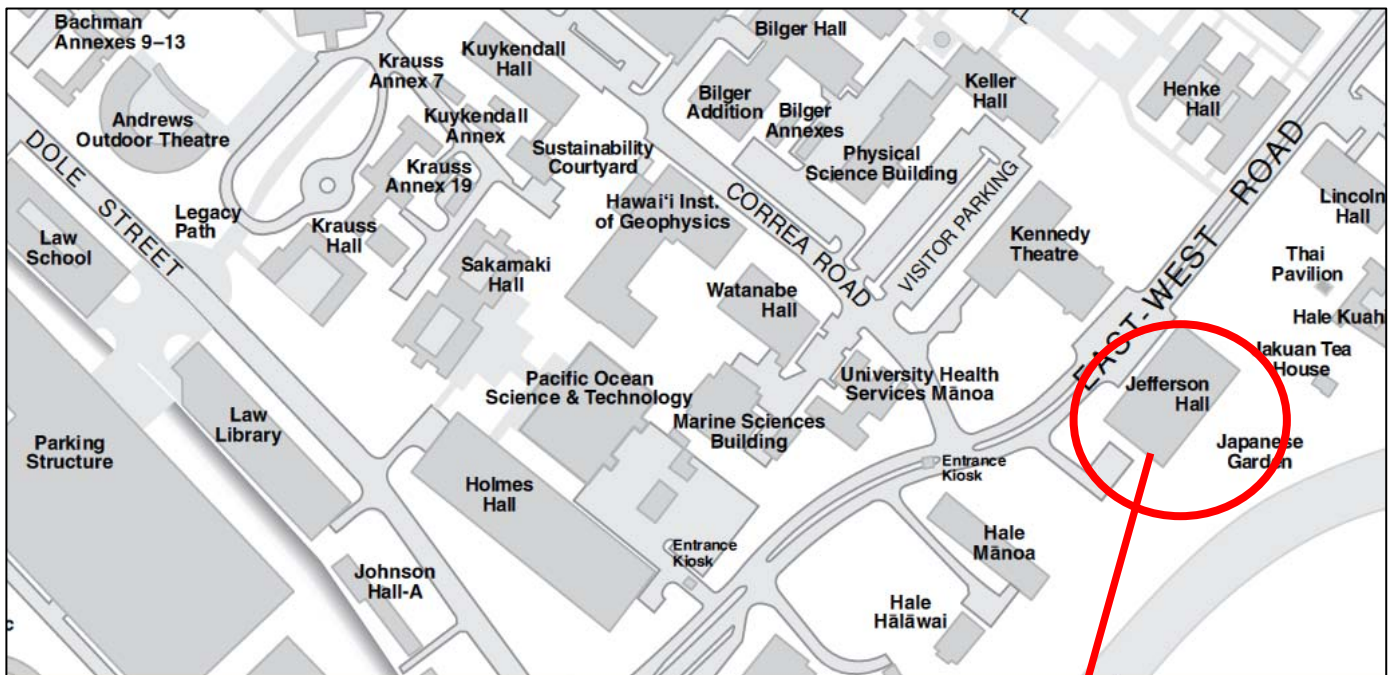
- Trane, Sanyo, Multistack, Evapco, Calmac

The Gas Company

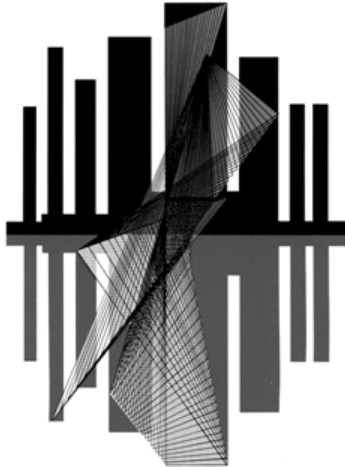
For reservations, click <http://hawaii.ashraechapters.org/events.html>; scroll down to the PayPal button & remit your electronic payment appropriately. If you have any further questions, call Dean Borges at 775-220-5051. Otherwise, make check payable to **ASHRAE Hawaii Chapter** and send your check to:

ASHRAE Hawaii Chapter
2011 Technical Seminar & Product Show Committee
P.O. Box 3916
Honolulu, HI 96822-3916.

<http://manoa.hawaii.edu/campusmap/>



Technology Awards Program



The ASHRAE Technology Awards recognize outstanding achievements by members who have successfully applied innovative building design in the areas of occupant comfort, indoor air quality and energy conservation. Their designs incorporate ASHRAE standards for effective energy management and IAQ. Performance is proven through one year's actual, verifiable operating data.

The purpose of the ASHRAE Technology Awards program is to:

1. Recognize ASHRAE members who design and/or conceive innovative technological concepts that are proven through actual operating data;
2. Communicate innovative systems designs to other ASHRAE members;
3. Highlight technological achievements of ASHRAE to others, including associated professionals and societies worldwide, as well as building and facility owners.

Each year the Society may present awards in seven categories: Commercial Buildings (New and Existing); Institutional Buildings (New and Existing); Health Care Facilities (New and Existing); Industrial Facilities or Processes (New and Existing); Public Assembly (New and Existing); Residential (New and Existing); Alternative or Renewable Energy Use.

For each category a first, second, and honorable mention winner may be named. Also, one of the category first place winners may be selected to receive the ASHRAE Award of Engineering Excellence. The recipient will have demonstrated the best overall compliance with the judging criteria. All current members of ASHRAE and its Associate Societies may submit entries. Entrants must have had a significant role in the design or development of the project.

The 1st phase of competition is at the Chapter level, then the Regional level, and finally at the Society level.

For the Chapter level – a simple short form application is all that is needed. Chapter entries will be due prior to March 31, 2011.

Please contact Bill Lee at 687-8884 or lee@coffman.com for applications or if you know of good projects that would be applicable.

Student Activities at Society Meeting in Las Vegas



Front Row (L to R): KinKei Wu, Matthew Tio & Randee Chang

Back Row (L to R): Society SAC Staff Tarra Holman, Kaveh Khosroshahi, Ray Au, Prof. Ting, Willie Diguc, Society SAC Chairman Chuck Curlin, Brandon Spalla & Shotaro (Ike) Nagamine



Front Row (L to R): Ray Au, KinKei Wu, Shotaro (Ike) Nagamine & Dean Borges

Back Row (L to R): Willie Diguc, Elad Ngole Ngujede & Kaveh Khosroshahi,

2011 ASHRAE Winter Meeting – Students' Perspective

Brandon Spalla and Matthew Tio

Student Member, University of Hawaii at Manoa Student Branch

Being mechanical engineering seniors graduating in May 2011 from the University of Hawaii, attending the 2011 ASHRAE Winter Meeting in Las Vegas was a great experience for the both of us. More so, this was our second time attending such conference allowing us to experience the different events with much more in depth understanding with an additional year of knowledge about the HVAC&R industry. During the few short days of our stay, we attended the Plenary Session, took part in the student activities, went on central plant technical tours, attended seminars and walked around the AHR Expo at the Las Vegas Convention Center. We were able to soak up a lot more information about the industry in this trip to Las Vegas than we did on our previous trip to Orlando.

As returning students, who attended the Applied Thermal Engineering course (a.k.a. ME 417 Course) offered at the University of Hawaii, the student activities allowed us to view what the other schools submitted for the Florida Hospital Ginsburg Tower Design Project. We worked on this tough project last year along with four other students at the University. Viewing the project submissions from the groups who were being honored allowed us to compare our results and learn from their design. The presentations during the student lunch were also very informative and incorporated many real world applications for the material students learn in the classroom. One of the presentations that really stood out was the career path presentation. It was a well given presentation that laid out the different career paths of the industry and gave great metaphors to help understand the roles these careers play in the HVAC&R world.

We attended several seminars during the conference; a few topics of these seminars were the LEED commissioning of the Palazzo Hotel, new technologies and design strategies in the Japanese HVAC&R industry, and examples of Net-Zero buildings around the world. Our experience attending the seminars this year was much better than last year since we had more background on the technical aspects of the presentations. The first seminar we attended was commissioning the Palazzo Hotel and Casino. It presented a big challenge to the engineers working on that project as the Palazzo has a very large HVAC&R system. The presenters provided some insight on some of the problems they had with commissioning such a large project. For instance, the radios wouldn't work in the underground areas of the hotel so to get around this problem they used a team on an electric car to drive from person to person to make sure they were all on the same page. They stressed that team work and effective communication were very important in completing the commissioning.

Moving to the second seminar, new technologies in Japan are allowing for energy efficient systems while allowing for greater occupant comfort through the use of controllable vents. Each occupant can electronically control how the air is directed from the vents into their workspace. The work spaces also had two vents each, one positioned to deal with the occupants needs, and a second a little behind the occupation zone that was used as an air curtain between zones. We also found the Net-Zero Buildings seminar very interesting. Architects and engineers are faced with different challenges when designing a Net-Zero building in different parts of the world. Since the buildings put less demand on the infrastructure around it, they can be built in more remote places.

The technical tours were the highlight of the trip. There aren't too many places in the world that have mechanical systems big enough to satisfy the loads created by the hotels and casinos in Las Vegas. We found the City Center Central Plant tour to be the most memorable due to the size of the equipment. We have never toured a plant in which the barrels of the chillers were a few feet taller than us, even with arms raised there was still a few inches to the top of the barrels. Also, the City Center had a specially-designed fire alarm system from Siemens Building Technologies. It had several touch screens that allowed any user to manipulate a CAD drawing of the building to determine where the alarm was and routes to guide emergency personnel. The system was so crucial that a second identical room was created where operations could be carried out if something were to happen to the main control room. We also attended a tour of the central plant at the Planet Hollywood Hotel and Casino. This system was not nearly as large as the City Center since it did not serve multiple buildings, but it still dwarfed most systems here in Hawaii. As always, seeing the implementation of different systems allowed us to learn more about the issues we will face when working in the industry.

We also enjoyed attending the AHR Expo at the Las Vegas Convention Center. This year, we had the chance to spend more time walking the show, which allowed us to network with quite a few companies. The show is particularly interesting for students due to the large number of products showcased as well as asking questions about equipment that is of interest to them. We also had the chance to talk to a few companies that had equipment that we could use in our Senior Design Project at the University.

Overall, attending the 2011 ASHRAE Winter Meeting in Las Vegas for the second time as students allowed us to focus on the areas of the industry that we were most interested in. This provided us with an opportunity to network with engineers and professionals that work in those particular fields. They provided us with valuable insight into what type of challenges we would face when entering the job market. We would like to thank the ASHRAE Hawaii Chapter and its members for supporting the students and providing us the opportunity to attend the ASHRAE Winter Meeting once again. Most of all, we would like to thank Professor Joseph Ting for inviting us to participate in his lectures as well as the 2011 ASHRAE Winter Meeting. His mentorship over the last two years has proved to be invaluable as we prepare to enter the workforce.

2011 ASHRAE Winter Meeting - A Student's Perspective

Shotaro (Ike) Nagamine

Student Member, University of Hawaii at Manoa Student Branch

As a student of Professor Ting's HVAC course, ME 417 at UH Manoa, we were given the opportunity to attend an ASHRAE conference. The ASHRAE Hawaii Chapter & its HVAC&R community were very generous to sponsor our trip. At the conference, we were given an opportunity to do various HVAC&R related things including seminars, talks, tours, and the trade show. The following paragraphs attempt to summarize everything we did over the trip from my perspective.

Talks:

There were various speeches, talks, and quick introductions of various people. One of the most memorable ones was a quick talk by Mr. Dave Branson, about a new type of filter. He was asked on stage for a snippet of information about his company and its cutting edge filter. It filters the air through a filter laced with titanium dioxides, or some derivative (which I took to mean company secret). The titanium is then activated using a low temperature ultra-violet light. This consumes all the organic compounds in the air, which include bacteria, mold, and mildew. He has likened this to the effects of a common catalytic convertor which are used in all new cars. In cars, the catalytic convertor is used to completely combust CO to CO₂, and it also reduces SO_x and NO_x gasses. I thought this was a really interesting concept and was one of the most interesting ideas I took from the conference. This quick 5 to 10 minute presentation really got me thinking, how much more HVAC&R systems can be improved? Although this is obviously conceptual and must be proven to work well as well as should be cost efficient, it is an interesting step.

Tours:

We also attended two tours, one to the central plant in City Center. The city center plant was amazing in its size as well as its technology. It was an eleven (11) story high building. It housed six (6) fiberglass cooling towers, each capable of 11000 GPM. Because it was winter, we were only able to see one of the towers operating, in some sort of regeneration mode. We were also given a list of all the other items such as York Chillers, high pressure gas fired English boilers, cogeneration gas turbines, emergency generators, diesel storage tanks, fire protection storage tanks, etc. The building had over 5,000 separate zones.

The City Center building was the largest privately funded project, with the official cost being about 8.5 billion dollars, while unofficially people have speculated that it cost upwards of \$11 billion. It was also the first building of its size to be certified LEED gold. It also was the first building to generate its own electricity on the strip.

The manager of the central plant allowed us in to see the touch-screen controlled fire protection maps in the office. The City Center plant has the first ever touch screen maps costing millions to buy, implement and get them operational. He mentioned that in time, most buildings will eventually start using the system they designed. Although I didn't write down the exact figures, I believe he said after the design, they fiddled with the settings to gain even higher efficiency. I think the range of money saved from the fine tuning the system has saved them almost 6 figures, per MONTH.

At our next plant tour, there was less technology but we got more hands on experiences by walking around to observe each component of the HVAC&R system. We were able to walk up to the cooling towers and peek into the giant fans. We walked to the chillers, the boilers, heat exchangers etc. Although the scale was smaller than the City Center central plant, it was just as interesting. My classmates and I ended up trying to figure out the chilled water loop/condenser water loop. It was quite confusing since they did some adjustment to the system after it was built, so some pipes would loop in confusing directions.

From the tours, what I took away was their cleanliness. It was pretty amazing how clean it was compared to some of the central plants I have seen in Hawaii. I wonder if it is a function of how new their buildings are, or their overall quality control.

The product show was HUGE. There was basically an entire convention center hall filled with various vendors. They ranged from tools, to controls, to HVAC&R system production machinery. Some of the vendors that still stick to my mind were the uncommon ones: There was a gas fired radiant heater. It was a see-through tube with a swirled flame trapped within it. The heat off of it was intense – I didn't realize how much heat from a fire could be transferred via radiation. I also wondered what happens to the waste gas. Is it thrown away thru the exhaust system? I didn't get to ask these questions because they were quite busy, but I did gain a lot of food for thought.

Another interesting item I saw was cloth ducting. Instead of grilles or registers, they basically had holes cut into the silk skin. When I asked how they could insulate a system such as this, the vendor remarked that the silk skin actually breathes a little, so it creates a bubble of fluid around the ductwork. How efficient or effective this is, I didn't ask, but it was still a very interesting idea. There was also a ductwork stamping/creating machine as well as a CNC sheet-metal plasma cutting machine. Overall, it was quite a good view into the practical side of HVAC&R. It was almost an exact opposite of my viewpoint on the seminars I attended.

The seminars we attended were also very informative, but it was not quite as fun. Perhaps it was the seminars we picked, but they ended up being a little too in-depth. Instead of giving the idea and elaborating, they went directly into the details giving us numbers that meant nothing to us. It might have been our lack of knowledge on the research side of HVAC&R, but I thought the seminars weren't as thought provoking or practical as the other things we did. I didn't get to attend a forum, but some of my classmates remarked that it was much more interesting. I probably should have attended.

In conclusion, I really enjoyed the ASHRAE conference. It was a good continuation to the HVAC&R course. In the “student introduction” speech, we were given a quick review of HVAC&R, which I found interesting because everything that was mentioned, we had already covered in class. The tours were probably the most practical and interesting to me. Especially since the buildings we were viewing were very new and high-tech. The only thing I regret is that we didn't really get to see a whole lot of the new wave of technology, of green- buildings and zero-energy buildings, since that was the main topic of the conference. If the seminars I picked were focused on these topics, I don't think I got too much from them, as the seminars I attended were not at all related to the main topic of the conference. I want to thank the ASHRAE Hawaii Chapter and Professor Ting for giving all of us the chance to experience this conference. I think it did really give me things to think about as I try to finish graduate school and decide what I will do for my future.

Kaveh Khosroshahi

Student Member, University of Hawaii at Manoa Student Branch

The ASHRAE conference at Las Vegas, Nevada was an eye opener, a great opportunity to become more informed and familiar with the state of the art, leading technologies involved in the Heating, Ventilation, Air Conditioning and Refrigeration (HVAC&R) industry. It was the vast number of companies participating in this event that caught my attention by surprise. This showed how vast and broad the HVAC&R industry really is. International companies were also included, from fabrication to control systems. When it came to system selection, I sensed a healthy competition due to the number of options and choices available that the customer could pick from. I realized for instance, as I started a conversation with one of the duct fabrication companies, the other ones were also paying attention to our conversation. As I finished the conversation and walked further down the aisle, another rival fabricator sparked a conversation with me. This is how I became aware of the healthy rivalry and completion that was going on. I personally believe that competition is perfectly healthy and necessary for the industry to grow and new technologies to flourish.

As I browsed the Exposition, many partnership opportunities and ideas developed in my head. From a simple pre-filter distribution line; to an in-depth technology analysis of the new nano-HEPA filters that recently came out with improved efficiency and reduced pressure drops; to Merus rings designed to self sufficiently break down lime, rust and microbiological organisms inside water/oil/fuel pipes by means of destructive interference of electromagnetic waves, all sparked my interest. As I held further discussions with other companies, I realized that all one needs to get into the industry is first and foremost, the desire, passion and interest to pursue one of the technologies more than experience and/or technological expertise. As I kept expressing my ideas and interest to my colleague, Willie who was keeping my company, he was blown away by the amount of interest and excitement that I had about various business opportunities. Overall, after that event, I became a new person, realized what technologies are out there, what the needs and demands are, and what the possibilities to meet these demands are. In my opinion, there are still a lot more room for growth within the industry, especially with the focus on self sustainable systems for military and commercial use for instance in remote locations.

Another portion of the trip was mainly focused on the ASHRAE society. I was quickly educated about the inner working of the society, the politics, the inner workings associated and also the purpose of the society. On the first night, leading engineers and leaders of the society were recognized and congratulated, followed by a speech by a very successful and inspirational speaker Mr. Bacon. The following day the conference had a more student oriented agenda. Different ASHRAE student regions were recognized and awards were given to successful students as well as 2010 design competition winners. A quick crash course presentation was given about the design of HVAC&R systems. I realized how lucky we were to have an entire semester to learn in-depth design of HVAC&R systems in Prof. Ting's UHM ME Course 417 (Applied Thermal Engineering). I realized not everyone within the conference was as fortunate as we were to have had the great opportunity to attend his HVAC&R class. It's perceived to be considered a significant flaw by most of the hiring consulting and contracting companies in Hawaii when UHM mechanical engineering graduates missed to take his class.

The overall lesson that I got from this trip was that, the HVAC&R industry has a more relaxed and positive vibe than other industries for instances, power generation industry solely due to the fact that, they provide comfort for the people and they realize that comfort is an important parameter in living a healthy and happy life. I take great pride to be a part of this team, to be able to travel and learn, to be able to socially connect with the industry leaders and followers, and most importantly, to lose the scare of entering the industry, gain the confidence needed to succeed and believing in myself including, the knowledge and social skills that I have to succeed in this business. Lastly, I would like to thank Prof. Joseph Ting, Mr. Dean Borges and the HVAC&R community in Hawaii that gave me a chance to get exposed to this industry and realize the endless possibilities to start my professional career.



Front Row (L to R): Ray Au, KinKei Wu, Shotaro (Ike) Nagamine & Prof. Ting
Back Row (L to R): Willie Diguc, Elad Ngole Ngujede & Kaveh Khosroshahi,

2011 ASHRAE Winter Meeting - A Student's Perspective

Elad Ngole Ngujede

Student Member, University of Hawaii at Manoa Student Branch

The trip to Las Vegas was trilling and very educative base on the fact that most of the speakers and the tours we took clarified me more on my UHM ME 417 Course. This gave me a better understanding of what HVAC&R is all about and how much work it entails. Among all the speakers, whom I listened to, some of my best where as follows

Mr. Douglas Duf: He spoke about "The stuff you should know". Although this had nothing to do with HVAC&R, it made me better understand that the knowledge of an engineer is not all that required for a great future. Acquiring better social skills thru knowing oneself by strengthening on "what we know we don't know" is very vital.

Another speaker I found very educational was one of the speakers from the specific seminar on "Integrating Solar and Hydronic Heating (ISHH) for Residential and Small Commercial Systems. It was very fascinating as he used multiple heat source and heat load with an intermediate design he called ZIA (it appears that the schematic diagram looks like the Mexico flag) to heat up commercial systems. What I found interesting was the fact that he used the basic knowledge on HVAC&R to come up with a simple, very user friendly design. The design had simplified wiring, seasonal setting, intuitive icon interface, interconnected thermostats adjusted from any desired location and memory storage for component failure discovery.

More so, our trip to visit the MGM/City Center Central Plant and the Planet Hollywood Central Plant was just mind blowing to me. After touring the City Center Central Plant (125 feet high, 11 story, 51,155 square feet), and listening to the short briefing on controls from the facilities manager, I came to understand that a control expert can produce a better efficiency without changing the design by simply modifying and regulating the proper flow rate in and out the system.

The tour to the Planet Hollywood Central Plant just showed me how big and efficient a plant can be, and how HVAC&R is very vital to a community. The chillers and large cooling towers we saw were very huge and made little or no noise. Also, the chance to get to see how the plant had utilized the innovative arrangement of the chilled water and condenser water piping to improve efficiency was very educational, since we had to debate within ourselves on why that was the case.

Despite the fact that we could not have the time to attend all the seminars and tours , and the fact that some of the speakers where foreigners (thus made it harder to understand them) ;I strongly believe that the ASHRAE Winter Meeting in Las Vegas provided me with more than I expected. It was very educational and gave me a great inspiration to better myself and stay in the Industry so as to do something creative, or perhaps, to partake in certain employment to manage facilities pertaining to the control of the great central plants similar to those out there in Las Vegas.

2011 ASHRAE Winter Meeting - A Student's Perspective

Willie Diguc

Student Member, University of Hawaii at Manoa Student Branch

This year's American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Winter Conference, held in Las Vegas, NV, had offered the following: complete technical programs, social events, educational courses, technical tours, and a product show / expo exhibit. My agenda consisted of three (3) technical programs (TP1-3), two (2) technical central plant tours (CPT 1&2), a walkthrough of the enormous AHR Expo / Product Show floor room, and social gatherings/events:

- TP1: Net Zero Energy – Seminar 18 – Cutting-Edge Japanese Technologies for Zero-Energy Buildings
- TP2: Low Energy Design – Forum 3 – Energy Recovery Technologies in Labs
- TP3: HVAC Systems & Equipment – Seminar 28 – Integrated Solar and Hydronic Heating for Residential and Small Commercial Systems
- CPT1: MGM CityCenter and Central Plant Tour
- CPT2: Planet Hollywood Central Plant Tour
- AHR Expo / Product Show
- Social Gatherings/Events, Held Every Day of the Winter Meeting

Cutting-Edge Japanese Technologies for Zero-Energy Buildings

This seminar focused on a Zero-Energy Building (ZEB) project called “K Building,” a high-rise used for offices built with some of the new HVAC technologies Japan is utilizing in their high-rise construction. K Building included such technologies as: Solar Collectors, Multiple Split Heat Pump Systems, and a new trend in Japan, Task AC – Personal / Individual Sensoring. Presenters showed data representing savings in energy and money when a system is dedicated to an individual.

Energy Recovery Technologies in Labs

This forum was an open discussion of what energy recovery techniques companies are implementing and energy recovery technologies that are being installed and how effective these technologies are. In a Community College low level usage Marine Biology Lab, an Enthalpy Wheel was used to recovery energy. This can be implemented because of the low risk environment; particles in the return air stream where found to be non-lethal and non-harmful. It was found that only 1-2% of contaminated return air gas transferred back to the supply air stream. Other applications such as chemical labs where there are high risks, companies steered far from enthalpy wheels. Systems such as heat pipes and direct spray-indirect evaporative cooling were the safer choices, which also fell within ASHRAE 90.1-2010 Standards.

Integrated Solar and Hydronic Heating for Residential and Small Commercial Systems

Topics included in this seminar were: Advantages of Primary/Secondary Plumbing Design and Advantages of Integrated System Control. The floor plan for the implemented HVAC&R techniques and technologies were less than 10,000 sq. ft. This session presented best practices for simple, energy efficient direct solar water to radiant heated flooring designs. The main idea behind this design was the plumbing layout, primary looping and the controls directing the flows. The presenter's design for a residential/small commercial plumbing loop

consisted of a solar water heater, domestic hot water tank, condenser water, and radiant heated flooring system.

MGM City Center & Central Plant

The MGM City Center is a LEED Gold, 17 million sq. ft. multi-use massive complex which is on 76 acres located on the Las Vegas Strip. The total cost of this project was approximately \$11 billion, the largest privately funded construction project in the history of the U.S. The Central Plant for the MGM City Center is roughly 51,000 sq. ft. with 11-stories. Some green technologies for this plant include reclaimed water and an on-site power plant. Some of the highlights to the central plant are: cooling through floors, max cooling capacity – 34,400 TONs, max heating capacity – 127 MBH, six (6) dual compressor chillers, 5,740 TONs each, six (6) fiberglass cooling tower cells, 10,900 gallons/min each, three (3) gas-fired 1,000 BHP water tube high pressure gas boilers, and three (3) 2.4 MW diesel fired 3,600 BHP emergency generators. By far this was the most interesting and

AHR Expo / Product Show

The massive AHR Expo/Product Show, held at the Las Vegas Convention Center included 1900+ companies from around the world presenting new/current products for the HVAC&R industry. One of the companies there was Merus Technologies, a company from Germany that provided a simple 2 piece bolt-on ring which prevents lime scale, corrosion and algae & bacteria in pipes. This ring attaches to the outer diameter of a pipe (up to 6.5 ft in diameter, protects up to 160 ft of piping, and can be installed on metal or PVC piping) and emits oscillations to the water created by a programmed magnet. The oscillations then alter the physical properties of the substance and prevent rust/algae molecules from forming. Some current applications are Coca Cola bottling plant and Buckingham Palace.

Social Events

Breakfast with Regional Directors, dinner with world renowned companies, Aaon and Mitsubishi to name a few, a special gathering with Region XIII directors and members, and a plenary session with keynote speaker Jack Bacon, Ph.D were only some of the many social events that 2011 ASHRAE's Winter Conference in Las Vegas, NV had to offer. The breakfast with regional directors was a great treat. Meeting the people and listening to the experience they have been exposed to during their career was informational. Being invited to dinners held by Aaon and Mitsubishi opened new doors for career opportunities in the future and expanded my social network. Seeing that ASHRAE has extended all the way to Asia - Region XIII shows how strong the ASHRAE society is. Finally, attending the session with keynote speaker Dr. Jack Bacon on green technologies and methods took mechanical engineering to another level. The work he has done for third world agricultural enhancements and globalization of business has inspired me to become a better engineer.

In all, this experience is one that I will be remembering for a long time. The networking and communicating with some of the leaders of ASHRAE is one thing that I will not be taking for granted. Going on technical tours and physically seeing a HVAC&R central plant helped my understanding of the theoretical work and diagrams I've learned in class and made them practical. Attending technical seminars and forums really showed the real world problems that mechanical engineers have to face day-to-day. I'm glad that I got the opportunity to see the many things the HVAC&R industry has to offer. This experience has solidified my career path toward HVAC&R engineering.

2011 ASHRAE Winter Meeting – A Student's Perspective

KinKei Wu

Student Member, University of Hawaii at Manoa Student Branch

After taken a semester in Course ME 417 (Applied Thermal Engineering), I have learned a lot about HVAC&R applications and understood the importance of HVAC&R system. This winter, we were given an opportunity to attend the 2011 ASHRAE Winter Meeting that took place in Las Vegas, Nevada. In this trip, I have gained more experience and discovered more new things.

After 6 hours of flight, everyone was tired and hungry. With outside temperature of 40 degree Fahrenheit, most of us were freezing. Although it was very cold outside, indoor such as the airport, shopping malls, and hotels were warm because they were equipped with heater. It suddenly reminded me the importance of HVAC&R system so we can stay warm and comfortable indoor.

On Sunday morning, we attended the student activities organized by ASHRAE at the Las Vegas Hilton Hotel. There were several presentations established to keep the student members informed. One of my most memorable presentations was "Choosing Your Career Path." The presenter shared the ideas about how to pick our career and how to prepare for an interview. We also listened to two students from Purdue University, who presented their project, "Smart Home Controls". This control is currently installed in a house and it helps to reduce the usage of energy, emission and operating cost.

Thereafter, we had a first technical tour to the Central Plant in City Center Complex. It was 125 feet high, 11-story building with more than 50,000 square feet of area. It was an amazing tour because it was my first time to see those huge fiberglass cooling towers, dual compressor York Chillers, 400 BHP waste heat recovery units, diesel storage tanks, large touch screen controls and the backup units in case the touch screen controls fail.

That evening later, we were given an opportunity to have a dinner with the member and leaders of the ASHRAE Region XIII and other invited current & past regional directors. I had an opportunity to meet with the members who came from Hong Kong, Taiwan, Philippine, Malaysia, Thailand and Singapore. We all had a great time.

One of which was "The Cutting Edge Japanese Technologies for Zero-Energy Building". The presenters shared the ideas about zero emission in Japanese houses and buildings; and, the importance of minimizing the emission of carbon dioxide. They compared the carbon emission in Japan, China and USA. They discussed that the average energy consumption for an American family is much higher than a Japanese family. They have also mentioned that Japanese engineer is designing houses and building to further reduce the energy usages; and, the Japanese government will

accelerate the speed of eco-houses. It could have been a better presentation if it was not flooded with too many figures and numbers. I suddenly felt I was overwhelming. In addition, we were provided with many terminologies that I did not understand. In spite of those drawbacks, I still enjoyed this seminar, as I have learned how the foreign country's speakers have stepped up to the plate in protecting our environment.

That afternoon later, we joined the tour to the Planet Hollywood Central Plant. It was a great tour because we could walk around the plant freely and take pictures. All of us were trying to figure out how those chillers, boilers, heat exchangers, pumps and air handling units were connected. We climbed to the top of the central plant and took a quick tour of those roof top units including the huge cooling towers.

The following day on Tuesday, we walked through the product show at the Las Vegas Convention Center. The convention center was huge. Representatives from various HVAC&R companies kept busy demonstrating their products to the attendees. Products represented at this show were as follows: pumps, compressors, heaters, insulated pipes and ductworks, tools and more. It was a great opportunity to learn about the technical side as well as the business side of HVAC&R industry.

To sum up my trip, those days in Las Vegas were enjoyable and memorable. I am glad that I was given this opportunity to attend this winter meeting. I have learned more about the HVAC&R industry and enjoyed the comfort provided by the HVAC&R systems where they are installed. Unlike Hawaii, where temperature ranges between high 60s & high 70s Fahrenheit, the winter in Las Vegas was very cold. Most of us did not prepare enough clothing for such a low temperature in the 30s, especially at night with the wind chill. However, with HVAC&R system, we were able to stay warm and comfortable indoor.

Moreover, I have come to learn the reasons why it is important to maintain the appropriate temperature and humidity in the indoor environment. At night, when we were resting at the hotel with the heater on, the air was warm but it was very dry. As no humidification was provided, I could feel that my nose and throat were dry and I ended up drinking plenty of water. In addition, I have witnessed that some casinos became too warm when it was too crowded thus experiencing discomfort to gamble through the entire evening.

This trip has allowed me to gain my interest to work in the HVAC&R industry, because I believe that HVAC&R engineering provides practical application to our daily life. I can also provide the knowledge I learned in UHM ME 417 Course as well as my Las Vegas trip to enhance the indoor environment, so that everyone can enjoy the comfort provided by HVAC&R systems, which I will help to design or install in the future.

2011 ASHRAE Winter Conference – A Student's Perspective

Ray Au

Student Member, University of Hawaii at Manoa Student Branch

A Safe Bet: Zero-Energy Design was the theme of the 2011 ASHRAE Winter Conference; it highlighted the importance of finding the balance in design. The technical program focused on efficiently using of energy, different design approaches and other topics related to refrigeration, standards and codes and HVAC system, equipments, applications and fundamentals.

The student programs supplemented us with activities in additional to the conference's venue. Students attending this conference came from various schools around the world. UHM students were encouraged to attend technical sessions and events at this conference in order to expand their horizons supplementing their classroom experience. Doing so will help to turn our theoretical knowledge into a more practical reality as an engineer. The AHR EXPO had about 1900 exhibitors (manufacturers and suppliers) of the latest HVAC&R systems, equipments, products and services at this exposition. The exhibitors promised the attendees greater energy efficiency, greener products and more sustainable technologies their respective products have ever offered. That said, these manufacturers have accelerated their pace to the extent that new products and innovations are coming to the market faster than expected. This conference had three sectors; technical seminar, technical tour and AHR EXPO. I have come to realize that these three sectors of our planned expedition provided me both the theoretical and practical sides of HVAC&R engineering.

The technical seminars were actually technical presentations of how to approach net zero energy in different aspects, countries, ways and results. I went to two technical seminars; "Cutting Edge Japanese Technologies for Zero-energy Building" and "What energy recovery technologies in Labs are being utilized?" For the "Cutting Edge Japanese Technologies for Zero-energy Building", this seminar is more informative than knowledge-based. The information about how make different cities in Japan approach Zero-energy in buildings was aimed to establish models for regional energy management system in reforming the HVAC&R system and its life cycle. By approaching these results, introducing smart houses and buildings technologies to 4000 households, installing the PV system for 1000 houses and so on, will offer a comfortable low-carbon society in Japan. Different technologies were also applied including multi split heat pump package system. Other energy conservation measures including occupancy sensor that switches off the lighting during non-occupancy have been implemented to prevent wasteful energy consumption. I have learned how the others countries are applying their solutions to the energy problem we faced today, in order to create a net-zero energy design for tomorrow.

"What energy recovery technologies in Labs are being utilized?" is actually more like a forum than a seminar, different audiences will go to the front and share their experiences about how energy recovery in Labs does. It's interesting to know that the best energy recovery system in the market place might not necessarily be the best fit for any existing

facilities. The presenter stated that, most often, we design a system on paper and that we always have selected the most efficiency unit, however, when the budget was in-place, and the space was defined, the most appropriate design system might not become the best choice from the energy standpoint. In other words, designing the appropriate system that is practical to operate and maintain is more important to fulfill the client requirements than to have an energy efficient system.

The technical tours were great activities for the students. The tours exploring the HVAC&R systems utilized for the various casinos, in the MGM / City Center central plant and in Planet Hollywood central plant helped us to have a better insight in understanding HVAC&R. These tours provided me the opportunity to compare the knowledge learned from the textbooks to the reality of how the systems function. It advanced my knowledge to the next level by witnessing how to apply what I've learned in real life. The magnitude of each component including the mammoth piping and ductwork as well as the controls system has impressed me that what we learned in class can be applied to good use only when we experienced to see the real system and its components are put together.

The EXPO was a gigantic product and services. As a student, my main goal at this EXPO was basically to network and learn. Among 1900+ manufacturers and suppliers, I was more interested in a few of them and have explored further to know the different categories of HVAC&R products & services. I was amazed that the fabric air dispersion system is merely a ductwork system that discharges air through a combination of porous fabrics, engineered orifices and linear vents. As my knowledge of ductwork system is limited, I thought that all ductwork is fabricated of sheet metals. After the discussion with the representative, the fabrics duct is actually formed a thermo barrier surrounding the duct due to the leakage on the surface of the duct. It is simpler, more flexible and easier to install. The representative shows us the different nozzles and duct shapes that fit in different spaces.

Besides the fabrics ductwork, another product impressed me is the heater. Hawaii is a tropical weather state, so within the state, heaters or warmers are not normally seen. I have come to realize that there were various types of heaters; some are gas-fired and infrared, while others use electricity. We also explored ourselves with the different safe controls for the gas-fired heater, which is one of the most dangerous heaters.

This conference was an eye-opening for me to shift my viewpoints in life... from being isolated in Hawaii with a narrow view in life to having a broader view of the world by and large. My new experiences with HVAC&R devices & equipment, such as, heaters, mammoth cooling towers, and state-of-the-art controls system have broadened my horizon. The seminars, technical tours, and product show have provided me an overall view of how the HVAC&R industry conducts its business globally. This is indeed an invaluable trip to acquire both theoretical and practical knowledge in HVAC&R and influence me to get interested in HVACR industry.

In closing, I am thankful to Prof. Joseph Ting, who gave me a chance to participate at this event where I learn to apply my classroom knowledge to the real world. Knowledge is important to everyone; however, the most important is to know when and how to apply the knowledge to real life. With that, I believe that I have matured to think "practical".

2011 ASHRAE Winter Meeting - A Student's Perspective

Randee Chang

Student Member, University of Hawaii at Manoa Student Branch

From January 29th to February 1st, I had the opportunity to attend the ASHRAE 2011 Winter Conference in Las Vegas, Nevada. For four days, I attended seminars, presentations and toured some of the Las Vegas' large central chilled water plants. I also got to view new products at the International Air-Conditioning, Heating and Refrigeration Exposition. The one overall thing that I had learned from the ASHRAE conference is that the many aspects of the HVAC&R industry are constantly growing and thus there are always new things to learn.

Although the seminars and the exposition were interesting, I felt that the presentations provided for the student members were really helpful. On January 30th, the students were scheduled for a day of presentations in which three key speakers spoke about what students need to know when they start working in the HVAC&R industry.

The first speaker, Drew Harrison, spoke about meeting new people. He said that 20% of the people will like you, 20% will not like you and the other 60% will decide if they would like you based on what you say. In order to get people to like you, you have to show an interest by asking questions. Also, by having shared values, you can relate to the person and thereby communicate further with them. Most people do not realize that what you say can have an enormous impact on how others view you. The third speaker, Mike Gallagher, had stated in his presentation that the HVAC&R community is relatively small and your reputation is important. Therefore, getting people to like you is very important if you would want to get ahead in the HVAC&R industry.

The third speaker, Mike Gallagher, showed students the different jobs that make up the HVAC&R industry. I felt that this was very helpful for students who are about to graduate. As a soon-to-be graduate, I personally felt a little lost about my future. When people asked me about what kind of job I wanted to get into, I could not give them a specific answer because I did not have any knowledge of the kind of jobs that the HVAC&R industry offers. The speaker gave me a better insight of the types of jobs I could be getting into. By going over the basic processes of the HVAC&R industry from construction to maintenance, the speaker gave students a more in-depth look at what certain HVAC&R jobs entail and thus a possible career for the future.

The second speaker, Douglas Zentz, spoke about what one needs to know when we enter into the HVAC&R industry. This was very helpful to me because with all the classes we have to take in college it is easy to get overwhelmed with all the information. For many students, things that we have previously learned are often forgotten because they are not necessarily relevant to the classes we are taking now, with the exception of

UHM ME 417 Course, which is taught by Prof. Ting. By giving students key things to remember, there is less chance that we can forget and in turn, it will give us more confidence in our abilities and knowledge of the HVAC&R industry. Prof. Zentz's talk has refreshed what we have just learned in our applied thermal engineering class (a.k.a. ME 417 Course).

On January 30th and 31st, we were given the opportunity to tour the Las Vegas City Center Complex HVAC&R System and the Planet Hollywood Central Plant. The tours were helpful for students who have not seen a chiller plant. For me, it allowed me to see the different needs that one addresses due to the climate.

For example, in Hawaii, since it is humid and warm, dehumidification is an important issue. If indoor environment would experience inadequate sensible load, reheating the air would improve the comfort for the occupants. However, in Nevada, where it is dry and the winters are cold, it is essential to heat as well as to humidify the indoor air for comfort. Although the same components are used (chillers, cooling towers, boilers, etc.) in both Hawaii and Nevada, it is interesting to see how little changes can turn a harsh environment to a comfortable one.

The seminars and exposition helped open my eyes to new innovations in the HVAC&R industry. It showed me areas in which I could study and possibly discover new ground-breaking products and processes. From zero-energy buildings to solar heating, the HVAC&R industry is trying to be green while bringing comfort to people and the students are on the forefront of this movement. I feel that the ASHRAE conference is an important event for all aspiring HVAC&R engineers because it gives them the opportunity to become exposed to the new technology and innovative processes of the HVAC&R industry. At the beginning of the conference, I was just starting to understand the basics of the HVAC&R industry and now I understand a little more and am starting to look towards the future of HVAC&R.