

THE HOT AIR DIFFUSER IDAHO CHAPTER NEWSLETTER

FEBRUARY 2011

VOLUME 17 ISSUE 4



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PRESIDENT'S MESSAGE

Greetings Idaho ASHRAE members,

Mark your calendars for April 15th, it's our annual technical conference. Laura Rasmussen has graciously offered to chair the committee and has begun scheduling another great line up for us. We will keep you all posted on the details.

Thanks to all that made the tour last month, from the reviews it was very informative. We are back at the Idaho Power Building this month to learn about commissioning.

February 20th starts National Engineers Week. Cory Law is going to be meeting with students at BSU to help promote ASHRAE. See you all Wednesday!

Carl Marcum

President Idaho ASHRAE Chapter

FEBRUARY PROGRAM*

COMMISSIONING AGENT RESPONSIBILITIES

This month's speaker will be John Rimer of McKinstry discussing the commissioning agent's responsibilities. John is the manager of the commissioning department at McKinstry.

**When: Wednesday, February 9th
(11:45 – 1:00)**

**Where: Idaho Power Building
1221 W. Idaho Street
Boise, ID**

***Please RSVP at www.idahoashrae.com.**



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IMPORTANT DATES

FEBRUARY 9, 2011—ASHRAE MONTHLY MEETING

MARCH 9, 2011—ASHRAE MONTHLY MEETING

APRIL, 2011—TECHNICAL CONFERENCE

MAY 11, 2010—ASHRAE MONTHLY MEETING

JUNE, 2011—ASHRAE GOLF TOURNAMENT

ATTENTION: ASHRAE MEMBERS

**The Chapter is now accepting
advertisements in the monthly newsletter.**

Sponsorship Rates are as follows:

	Der Issue	Annual (9 issues)
Business Card	\$10.00	\$50.00
Quarter Page	\$25.00	\$200.00
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ASHRAE, founded in 1894, is an international organization of some 50,000 persons. ASHRAE fulfills its mission of advancing heating, ventilation, air conditioning and refrigeration to serve humanity and promote a sustainable world through research, standards writing, publishing and continuing education.

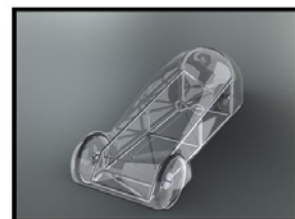
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HISTORY LESSON

Five Years Ago

The chapter president was Bob Tikker. The meeting was held on February 10, 2006, at the Idaho Power Building. A panel discussion was held discussing "LEED Projects in Idaho".

Ten Years Ago

The chapter president was Ben Kohler. The meeting was held on February 9, 2001 at the King's Table Restaurant. The meeting was a presentation by Shirl C. Boyce, Boise Area Chamber of Commerce, on Idaho's economy.

Twenty Years Ago

The chapter president was Scott Richardson. The meeting was held on February 8, 199. The program was a panel discussion on "Deregulation and Its Impact on Energy Availability", "Meeting Demand for Energy During Idaho's Rapid Growth", "Conservation's Significant Role in the Northwest's Energy Picture", and "How the Gulf War Will Impact Our Energy Supplies".

Twenty Five Years Ago

The chapter president was David Asmus. The meeting was held on February 10, 1986, at the King's Table Restaurant. The program was a presentation on the Boise Cascade Building conversion from a conventional constant volume refrigeration-and-reheat air conditioning system to a VAV system.

NEWS FROM THE HOME OFFICE

Green Tips Provide Guidance for Greening Data Centers: New ASHRAE Book

ATLANTA – More than 50 percent of the total energy consumption of data centers can be attributed to the power and cooling infrastructure that supports the IT equipment housed in them. Guidance in a new book from ASHRAE aims to help reduce that energy use through proven, easy-to-implement tips.

“Green Tips for Data Centers” identifies techniques for optimizing energy efficiency in existing datacom facilities. Many of the techniques can be implemented through simple operational changes, upgrades or modifications that require a relatively low investment and that cause little disruption to the existing operations of the IT equipment.

“The book has particular relevance right now since there is a significant focus on energy efficiency in data centers,” Don Beaty, co-founder of ASHRAE Technical Committee (TC) 9.9, Mission Critical Facilities, Technology Spaces and Electronic Equipment, said. “While it is fun and exciting to look at how we can design new data centers to be energy efficient, the fact is that there are many, many existing datacenters in operation.”

Among the 26 tips from the book are:

- Optimize supply air temperatures
- Install monitoring equipment
- Improve lighting efficiency
- Optimize data storage
- Improve transformer efficiencies

“The tips provide insight into practical techniques that have proven successful in other datacom facilities and give owners and operators the confidence to implement similar techniques in their own facilities,” Beaty said.

The book is part of the ASHRAE Datacom Series, developed to provide a more comprehensive treatment of datacom cooling and related subjects. Other books in the series are

“Particulate and Gaseous Contamination in Datacom Environments,” “High Density Data Centers – Case Studies and Best Practices,” “Design Considerations for Datacom Equipment Centers,” “Best Practices for Datacom Facility Energy Efficiency,” “Thermal Guidelines for Data Processing Environments,” “Liquid Cooling Guidelines for Datacom Equipment Centers,” “Datacom Equipment Power Trends and Cooling Applications” and “Structural and Vibration Guidelines for Datacom Equipment Centers.”

The cost of Green Tips for Data Centers is \$54 (\$46, ASHRAE members). To order, contact ASHRAE Customer Service at 1-800-527-4723 (United States and Canada) or 404-636-8400 (worldwide), fax 404-321-5478, or visit www.ashrae.org/datacenter/efficiency. Bulk discounts are available to individuals, companies and organizations who are interested in purchasing multiple copies.

Call for Papers: ASHRAE’s 2012 Winter Conference Seeks Papers on High Performance Buildings, Integrated Design, Energy Modeling and Specialized Applications

ATLANTA– Papers addressing advances in high performance buildings, integrated design and numerous high-intensity HVAC applications are being sought for ASHRAE’s 2012 Winter Conference in Chicago, Ill., Jan. 21-25.

The Specialized Applications track focuses on high-intensity HVAC applications, such as laboratories, hospitals and data centers, and seeks papers on design recommendations, regulations and lessons learned.

The Integrated Design track addresses how the integrated building design and integrated project delivery processes are being applied to build better buildings. Papers are being sought on case studies, lessons learned and ongoing research projects studying new project delivery methods.

The Energy Modeling Applications track seeks papers that address the range of different energy modeling and Building Information Modeling tools available, their use and specific applications, including systems, building and communities. Papers that address an integrated approach from modeling through end designs are requested.

In addition, papers are sought for tracks on Operations & Maintenance, HVAC Systems, HVAC Fundamentals and Applications, Professional Skills and Refrigeration.

The deadline for paper submissions is April 18, 2011. For complete information on tracks, contacts and submittal requirements, visit www.ashrae.org/chicago.

Full-length technical papers or conference paper abstracts (400 words or less) should be submitted by April 18.

For more information about the two types of papers and how to submit a full-length technical paper or conference paper abstract, go to the ASHRAE Chicago Conference webpage: www.ashrae.org/chicago. For accepted conference paper abstracts, the completed conference papers will be due July 8, 2011.

The Conference is expected to attract some 3,000 attendees from 60 countries. The technical program takes place Sunday, Jan. 22–Wednesday, Jan. 25, and includes paper presentations as well as non-paper presentations. Approved papers are published in ASHRAE Transactions. Held in conjunction with the ASHRAE conference is the ASHRAE-cosponsored AHR Expo, Jan. 23-25.

Duct Fitting Database Latest ASHRAE Resource to Become Mobile App

ATLANTA –ASHRAE’s popular Duct Fitting Database desktop application has become even more valuable as a smart phone app, allowing engineers to make complicated calculations in the field and receive faster results.

Developed for Apple's iPhone, iPod touch and iPad, the ASHRAE Duct Fitting Database (DFDB) app allows users to perform pressure loss calculations for more than 200 HVAC duct fittings in both I-P and SI units.

This new application ensures that engineers in the field have instant access to the most accurate information without having to return to their office to perform calculations. The mobile app features dynamic illustrations of each design, allows for easy use on the job to do quick duct pressure loss calculations and the inputs can be adjusted by touch and installation is automatic. Other special features of the DFDB app are as follows:

- Users can create individual projects, each with unique input values and results.
- Each fitting has its own custom set of input parameters and results.
- Users can easily change the minimum and maximum allowable values for all input parameters.
- Users can display and email two types of reports, which include a spreadsheet attachment that can be opened on a desktop computer to do further analysis.

The DFDB app is the second mobile app to be released by ASHRAE. The Society published the 62.1 app in the winter of 2010. The ASHRAE DFDB app can be purchased through Apple's online iPhone App Store for \$19.99. This initial release of the ASHRAE DFDB app includes supply and common round fittings only, though subsequent versions including all of the remaining fittings will be released monthly. Those who purchase the app now will receive these updates as free upgrades.

This app was developed for ASHRAE by Carmel Software Corp., a firm specializing in the development of engineering and scientific mobile and tablet software applications.

ASHRAE Recognizes Outstanding HVAC&R Industry Achievements

LAS VEGAS – Thirty-six people are being recognized by ASHRAE for their contributions to the Society and the building industry at the Society's 2011 Winter Conference held here Jan. 29-Feb. 2.

The **F. Paul Anderson Award**, ASHRAE's highest given for technical achievement, is awarded for notable achievement of outstanding services performed in the HVAC&R field. The recipient is **Presidential Member Richard P. Perry**, P. Eng, Fellow ASHRAE, Life Member, senior engineer, emeritus, DEC Design Mechanical Consultants, Ltd., New Westminster, British Columbia, Canada.

The **50-Year Member Award** is given to persons who have been a member of the Society for 50 years and have performed outstanding service to ASHRAE or its predecessor societies. The recipient is Richard Wright, P.E., Fellow ASHRAE, Life Member, who resides in Algood, Tenn.

Fellow ASHRAE is a membership grade recognizes distinction in the arts and sciences of environmental technology and is earned through achievement as a researcher, designer, educator or engineering executive. The Society elevated 13 members to the grade of Fellow ASHRAE:

- Walid Chakroun, Ph.D., is professor, mechanical engineering department, Kuwait University, Safat, Kuwait

- James Cummings is program director, Florida Solar Energy Center, Cocoa, Fla.
- J. Eduardo Donoso is president, Ing. Eduardo Donoso E Hijos C. Ltd., Quayaquil, Guayas, Ecuador
- Chad Dorgan, Ph.D., P.E., is vice president-quality and sustainability, McCarthy Building Companies, Inc., St. Louis, Mo.
- Presidential Member Damon Gowan, Life Member, is retired president and chief executive officer, EMCOR-Gowan, Inc., Houston, Texas
- Gershon Grossman, Sc. D., is professor of mechanical engineering, Technion-Israel Institute of Technology, Haifa, Israel
- Jaap Hogeling is manager of international projects and standard of ISSO: Dutch Building Services Research Institute, Rotterdam, the Netherlands and managing director of KBI: Dutch Quality Assurance Institute for Building Services Rotterdam, the Netherlands
- Russ Keeler, P.E., is principal, Chason Energy, Golden, Colo.
- Ravindra Kulkarni Sr. is owner/proprietor, R. S. Kulkarni, HVACR Consultants, Pune, India
- Cesar Luis Lim, P.M.E., is partner, business development officer, Kilojoule Consultants International Co., Paranaque, Philippines
- Aphichit Lumlertpongpana, Ph.D., is managing director, I.T.C. Co., Ltd., Bangkok, Thailand
- Hugh McMillan III is mechanical plumbing engineering coordinator, Becht Engineering Co., Inc., Cypress, Texas
- Farooq Mehboob, Life Member is principal consultant of S. Mehboob & Company, Karachi, Pakistan

The **ASHRAE Technology Awards** recognize outstanding achievements by members who have successfully applied innovative building designs, which incorporate ASHRAE standards for effective energy management and indoor air quality. Four projects received first-place ASHRAE Technology Awards:

- Amit Khanna, ARUP, San Francisco, Calif. in the new institutional buildings category for the Jerry Yang and Akiko Yamazaki Environment and Energy Building, Stanford University, Palo Alto, Calif. The building owner is Stanford University
- Gilles Desmaris, Dessau, Montreal, Quebec, Canada in the existing healthcare facilities category for the Pierre-Boucher Hospital, Longueuil, Quebec, Canada. The building is government owned and managed by CSSS Pierre-Boucher.
- Yury Lui and Chalres Eggert, HP Mission Critical Services, Chicago, Ill. in the new public assembly category for the Jewish Reconstructionist Congregation, Evanston, Ill. The building is owned by the Congregation.
- Peter H. Rumsey, P.E., Fellow ASHRAE, Integral Group, Oakland, Calif. in the new commercial buildings category for the David Brower Center, Berkeley, Calif. The project was developed by Equity Community Builders.

The **ASHRAE Student Design Project Competition** challenged teams of students to create an integrated sustainable building design as well as select and design HVAC&R systems

for the Ginsburg Tower, a 15-story patient tower, at Florida Hospital in Orlando, Fla. First place in HVAC System Design is awarded to Michael Angell, Nathaniel Boyd, Edward Gillett, Trong Nguyen and Justin Wiese of University of Central Florida, Orlando, Fla. First place in HVAC System Selection is awarded to ZacBuckmiller, Matt Kolins, Todd Kuno, Jared Palan, Nicole Vogt and Joel Wheeler of Kansas State University, Manhattan, Kan. First place in the Integrated Sustainable Building Design is awarded to Carolyn Lamb, Ryland Phelps and Amy Rose Keyzer of Lawrence Technological University, Southfield, Mich.

The **John F. James International Award** is given to an ASHRAE member who has done the most to enhance the Society's international presence. The recipient is Yuan-Wei Wu, chief engineer, Chinese Association of Refrigeration, Beijing, China.

The **E.K. Campbell Award** honors outstanding achievements by engineering educators is presented by the ASHRAE Life Members Club. The recipient is William Ryan, Ph.D., P.E., director of the Masters of Energy Engineering Program in the Mechanical and Industrial Engineering Department at the University of Illinois at Chicago (UIC).

ASHRAE Technology Awards Highlight Outstanding Building Projects

LAS VEGAS – Designers of systems for a university building, a synagogue, a hospital and a commercial building are recognized by ASHRAE for incorporating elements of innovative building design.

Recipients of the ASHRAE Technology Awards were recognized at the Society's 2011 Winter Conference being held this week in Las Vegas. The recipients have applied ASHRAE standards for effective energy management and indoor air quality. This year's Society-level competition had 34 entries.

"ASHRAE Technology Awards are awarded for innovative HVAC&R designs that provide superior energy saving, cost effectiveness, enhanced indoor air/environmental quality and excellent performance through application of new design concepts, new technologies or by applying existing technologies with innovative approaches," Wei Sun, chair of the judging panel, said. "Panel judges looked far beyond a good design or a high profile project, they confirmed that all judging criteria were well addressed and looked for the application of new technologies and innovative concepts. Winners challenged themselves to work outside their comfort zones."

Following are summaries of the winning projects:

Jerry Yang and Akiko Yamazaki Environment and Energy Building (Y2E2), Stanford University

Amit Khanna, Arup, San Francisco, Calif., receives first place in the new institutional buildings category for the design of the Jerry Yang and Akiko Yamazaki Environment and Energy Building, Stanford University, Palo Alto, Calif.

When Stanford Trustee Jerry Yang took Senator Barbara Boxer (D-Calif.) on a tour of the new building, known as Y2E2,

Boxer told the Yahoo! Inc. co-founder, "This is spectacular. It gives me a lot of hope!"

Y2E2 exemplifies a new kind of thinking aimed at providing watershed solutions in the areas of environment, technology and energy. It is the first element in Stanford's new Science and Engineering Quad 2.

The energy performance emphasizes load reduction, passive operation and efficiency, energy recovery opportunities, including self-generation, and allows for successful carbon-neutral operation through offsets. Y2E2 has post-occupancy verified energy consumption 44 percent below Standard 90.1-2004. In addition, the building spaces are either naturally ventilated or served via 100 percent outside air-handling units, maintaining high indoor air quality at all times.

Other highlights include north and east facing offices with adequate façade opening and solar protection to maintain comfortable conditions with no mechanical cooling or forced ventilation, achieved through the Adaptive Comfort Criteria in Standard 55, *Thermal Environmental Conditions for Human Occupancy*, and computational analysis; use of active chilled beams, making Y2E2 the first of its kind in California and among the largest buildings in the country to use them; and a natural smoke ventilation system. Y2E2 achieved a level of energy performance for a +0.9-4.6 percent premium that will pay itself back in four to six years.

Pierre-Boucher Hospital

Gilles Desmarais, DESSAU, Montreal, Quebec, Canada, receives first place in the existing healthcare facilities for the rehabilitation of Pierre-Boucher Hospital, Longueuil, Quebec, Canada. The building is government owned and managed by CSSS Pierre-Boucher.

Because of growth in ambulatory service needs, over 100,000 square feet, including a new hospital wing, operation block and laboratories, were added, as well as over 90,000 square feet of the existing hospital reorganized. By combining low-temperature water loops with a dual-compressor recovery chiller and a direct-contact condensing stack economizer, the design team was able to recover a significant amount of energy that would have normally been evacuated outside. Enthalpy wheels also were added in the fresh air units to reduce air heating, cooling and humidification loads.

The design isn't set apart only by its high performance but also the original way in which it was designed. Quebec's extreme winter temperatures require energy management more complicated than most areas. Through the use of building energy simulation software, designers evaluated different solutions before choosing the most efficient and cost-effective one. This led to a million dollar self-financed innovative project.

The hospital's innovative and efficient design significantly reduced energy use: reducing yearly natural gas consumption by 64 percent for the expansion area and 15 percent in the existing area in spite of the increase of ventilation rate in the rehabilitated part, which also reduces greenhouse gas emissions by 1,152 tons a year.

Jewish Reconstructionist Congregation

Yury Lui and Charles Eggert, HP Mission Critical Services, Chicago, Ill., receive first place in the new public assembly

category for the Jewish Reconstructionist Congregation, Evanston, Ill. The building is owned by the Congregation.

The new synagogue replaces its original building, balancing the limitations of a small site with an ambitious program that promotes worship, education and community objectives. Its innovative measures include use of displacement air diffusers that were carefully designed to integrate with architectural elements. Wood slats screen supply and return ventilation making them essentially invisible to the users while still permitting supply air to stratify in the room. The building's showcase three-story staircase was positioned for south exposure, which allows the air to act as a thermal buffer zone to capture solar and exterior heat gain. The staircase is equipped with outside air intake openings at the first floor and an exhaust air hood on the roof for natural ventilation. This design cools the stairs at no cost when weather conditions permit and captures the heat inside during the winter.

The building is heated by an ultra-high 94 percent efficient gas-fired condensing boiler and cooled with a high efficiency air-cooled modular chiller with peak power consumption at 1.212 KW/Ton.

The David Brower Center

Peter Rumsey, P.E., Fellow ASHRAE, Integral Group, Oakland, Calif., receives first place in the new commercial buildings category for The David Brower Center, Berkeley, Calif. The project was developed by Equity Community Builders.

The Center serves as a home for many environmental and social action organizations and combines offices and program facilities. Using the latest in energy-efficient technologies and design as well as 53 percent recycled building materials, the project makes the lowest possible impact on the environment, taking into account the true life-cycle cost of building construction, operation and maintenance.

The building uses some 60 percent less energy than the average U.S. building of similar use, before taking credit for the energy production of the onsite 25 KW PV system. Energy efficiency gains are provided by an innovative combination of HVAC and whole building design strategies and technologies, including an in-slab radiant heating and cooling system; a mechanical nighttime purge system that captures cooler summer night air, flushing the building and charging the high thermal mass; a high efficiency condensing boiler selected to operate at a lower supply water temperature; pumps with variable speed drives; ground floor spaces served by high efficiency water source heat pump systems; evaporative cooling; natural ventilation; and displacement ventilation.

The building's water saving features include waterless urinals (a landmark milestone: the first installation of these for the City of Berkeley); a rainwater catchment system that provides water for flushing toilets and irrigation; and low-flow fixtures.

The building features low energy and low carbon output mechanical systems and low water-use plumbing systems. It could achieve 70 to 80 percent lower carbon emissions per person than the current baseline due to well-designed MEP systems, efficient use of building space and a conscientious concrete specification.

Energy Savings Figures Announced for 2010 Energy Standard

ATLANTA – More than 30 percent energy savings can be achieved using the recently published 2010 version of Standard 90.1 vs. the 2004 standard, according to an **Final** announcement made today by ASHRAE at its 2011 Winter Conference, taking place this week.

ANSI/ASHRAE/IES Standard 90.1-2010, *Energy Standard for Buildings Except Low-Rise Residential Buildings*, which provides minimum requirements for the energy-efficient design of buildings except low-rise residential buildings, was published in November 2010. ASHRAE was awaiting the final results of analysis work from Pacific Northwest National Laboratories in support of the U.S. Department of Energy (DOE) Building Energy Codes Program on addenda included in the standard. The final figures were made available this week and were announced today at ASHRAE's annual press breakfast.

Without plug loads, site energy savings are 32.6 percent and energy cost savings 30.1 percent. Including plug loads, the site energy savings are estimated at 25.5 percent and energy cost savings 24 percent.

"Three years ago, the 90.1 project committee set an aggressive goal of 30 percent savings for the 2010 version," ASHRAE President Lynn G. Bellenger said. "That the target was met and exceeded is a testament to the talent and dedication of the men and women from ASHRAE and the Illuminating Engineering Society (IES) who developed and evaluated over 119 change proposals to increase the stringency of our flagship energy conservation standard. At the 35th anniversary of Standard 90.1, it continues to lead the way in our industry as the minimum standard for energy efficiency."

On a nationally aggregated level, building type energy savings ranged from 8.8 percent to 38.3 percent and energy cost savings from 7.9 percent to 33.6 percent. These figures include energy use and cost from plug loads.

Extensive analysis work was performed by a team from Pacific Northwest National Laboratories in support of the DOE Building Energy Codes Program. Sixteen different building prototypes were modeled in 17 different climate zones for a total of 272 building types and climate zone combinations.

How was the energy reduction achieved? Here are a few examples:

- The Scope was expanded so that 90.1 covers receptacles and process loads, including data centers. This allows future addenda to the standard to address energy consuming equipment and systems previously outside its scope.
- Building Envelope: Continuous air barrier and cool/high albedo roof requirements were added.
- Lighting: Most interior Lighting Power Densities were lowered, and additional occupant sensing controls and mandatory daylighting requirements were added for specific spaces, along with a new five-zone exterior Lighting Power Density table.
- Mechanical: Most equipment efficiencies are higher, energy recovery is required in more applications, economizers are required in more climates and more energy-conserving controls are required.

Modeling requirements have been clarified and expanded so that building modelers can more accurately compare energy cost of their building project with an appropriate baseline building as defined by the standard.

“The 90.1 standard is a fluid document,” Mick Schwedler, immediate past chair of the 90.1 committee, said. “As technology evolves, the project committee is continually considering new changes and proposing addenda for public review. The rigorous, open, public review process following ASHRAE and American National Standards Institute (ANSI) procedures, results in a document that is both technically sound and reaches consensus.”

“I agree wholeheartedly with Mick on the strength attributes of Standard 90.1 based on our ASHRAE/ANSI consensus process,” echoed Steve Skalko, current chair of the committee. “As we look ahead to exploring new areas of energy savings from energy consuming equipment and systems, we will seek input from materially affected and interested parties. We welcome their input to help the project committee in this endeavor.”

The standard is written in mandatory code language and offers code bodies the opportunity to make a significant improvement in the energy efficiency of new buildings, additions and major renovations.



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