

# THE HOT AIR DIFFUSER

## Chapter Newsletter

DECEMBER 2014 Volume 20 Issue 10



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## DECEMBER CHAPTER MEETING

### Topic: HP Data Center Tour

We will be touring the air handlers for the Hewlett Packard data center this month. There are four custom air handlers cooling the 800 KW data center with direct evaporative cooling.

Due to HP security protocol all visitors are required to sign in at the building 1 visitors lobby. We will all meet at building one between 11:30 and 11:50. We will all leave building one and head over to a conference room located across campus for lunch, then will view the air handling units.

### DO NOT BE LATE!!!

If you arrive after 11:50 and do not  
sign in you will not be able to meet  
up with the group.

#### When:

**Wednesday, December 10<sup>th</sup>, 2014  
11:45am to 1:00pm MST**

#### Where:

**Idaho Power Building  
11311 West Chinden Blvd  
Boise, ID 83714**



**Please Register online at:  
[www.idahoashrae.com](http://www.idahoashrae.com)**

## NOVEMBER:

### Topic: Liens & Other Payment Remedies

Last month's speaker was Geoff McConnell from McConnell Wagner Sykes + Stacey PLLC. Geoff is an attorney specializing in construction litigation and spoke about the legal view of the construction process, who is responsible for what, and your lien rights when working on private projects, publicly funded projects, and even tribal projects.

**McCONNELL WAGNER SYKES + STACEY<sup>PLLC</sup>**  
ATTORNEYS AT LAW

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

## DECEMBER

### Five Years Ago

The chapter president was Spencer Shepard. The meeting was held on December 11, 2009. The program was a tour of the West Boise Wastewater Treatment Facility and Watershed Interpretive Center at 11818 Joplin Road.

### Ten Years Ago

The chapter president was Tony Sutton. The meeting was held on December 10, 2004, at the Doubletree Riverside. Ingo Stroup, Senior Energy Specialist with the Idaho Division of Building Safety, gave a presentation on energy efficiency and related code updates.

### Fifteen Years Ago

The chapter president was Ben Strawn. The meeting was held on December 10, 1999, at the Double Tree Riverside. Prior to the regular meeting, Byron Jones, Kansas State University, presented a technical session on thermal engineering for human comfort. At the regular meeting, Byron Jones gave a presentation on thermal comfort.

### Twenty Five Years Ago

The chapter president was Dave Musgrove. The meeting was held on December 8, 1989, at the Kings Table Restaurant. Dean Entorf, Boise State University School of Technology, gave a presentation on the curriculum for this school and future plans for the School of Technology.



## NEWS FROM THE HOME OFFICE

### 2014 Green Building Standard Now Available from ASHRAE/USGBC/IES

**ATLANTA**— New requirements to further reduce energy and environmental impacts of buildings are contained in the 2014 version of the green building standard from ASHRAE, the U.S. Green Building Council and the Illuminating Engineering Society.

ANSI/ASHRAE/USGBC/IES Standard 189.1-2014, *Standard for the Design of High-Performance, Green Buildings Except Low-Rise Residential Buildings*, addresses the areas of site sustainability; water-use efficiency; energy efficiency; indoor environmental quality; and the building's impact on the atmosphere, materials and resources.

The 2014 standard incorporates 67 addenda, reflecting changes made through the public review process since the standard was last published in 2011. Appendix H gives brief descriptions and approval dates of the addenda included in this new edition.

"The new standard updates all of its sections to reflect the latest information available to the committee," Andrew Persily, chair of the Standard 189.1 committee, said. "Compliance with these updated provisions will help further reduce energy and environmental impacts through high performance building design, construction and operation while providing indoor environments that support the activities of building occupants."

Major changes in the 2014 edition include:

- **Energy:** Significant updates are included to reflect the publication of Standard 90.1-2013, *Energy Standard for Buildings Except Low-Rise Residential Buildings*, including revised building envelope provisions. Fenestration orientation requirements were updated based on new research, as well as changes and updates made to equipment efficiency tables, ENERGYSTAR references and continuous air-barrier requirements.
- **Energy Performance, Carbon Dioxide Emissions, and Renewables:** Changes and clarifications are included to reflect changes to Standard 90.1. Carbon dioxide emission factors for different energy sources are updated.
- **Indoor Environmental Quality:** Lighting quality is added to the scope of this section, and requirements are added for lighting controls in specific space types. Requirements for air sealing of filtration and air-cleaning equipment are clarified, and new requirements for preoccupancy ventilation and

building envelope moisture management are added.

- **Site Sustainability:** All site requirements are now mandatory, with prescriptive and performance options moved to the mandatory requirements. Requirements for stormwater management are enhanced, and new requirements added for bicycle parking and for preferred parking for low-emission, hybrid and electric vehicles. New requirements are added for predesign assessment of native and invasive plants.
- **Water:** More stringent water use requirements are included for toilets, clothes washers, dishwashers and green roofs.
- **Building Impacts on the Atmosphere, Materials, and Resources:** Requirements are updated for areas to store and collect recyclables, including batteries and electronics. Requirements also are updated for construction waste management and for life-cycle assessment. New requirements are added for multiple-attribute product declaration or certification and for maximum mercury content levels of certain types of electric lamps.
- **Construction and Plans for Operation:** Requirements related to environmental impacts associated with idling construction vehicles are updated. New requirements are added to reduce the entry of airborne contaminants associated with construction areas.

The cost of ANSI/ASHRAE/USGBC/IES Standard 189.1-2014, *Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings*, is \$128 (\$109, ASHRAE members).

### Importance of Refrigeration - and Ice Cream - Focus of ASHRAE Conference Workshop

**ATLANTA**— From Cherry Garcia to Sea Salt Caramel, Americans love their ice cream. Nearly 9 percent of cow's milk produced in the United States goes toward making ice cream, and America is the number one consumer worldwide. What better way to illustrate the importance of refrigeration technology, than to explore the process of making this country's favorite frozen treat?

Doug Reindl and Dan Dettmers' workshop, "I Scream, You Scream, We All Scream for Refrigeration Basics of Ice Cream," is part of the Technical Program at ASHRAE's 2015 Winter Conference. The Conference takes place Jan. 24-28, Palmer House Hilton, while the ASHRAE co-sponsored AHR Expo is held Jan. 26-28, McCormick Place. Complete Conference information and registration can be found at [www.ashrae.org/chicago](http://www.ashrae.org/chicago).

## NEWS FROM THE HOME OFFICE CONTINUED...

The session explores the process of making ice cream, leads attendees through the cooling load calculations and finishes up with a chance to participate in the ice cream making process.

One catch, however. Attendees have to correctly calculate the cooling load before they can taste the final product, which will be made cryogenically. The workshop starts at 8 a.m. Sunday, Jan. 25.

"We want to reach a younger audience to interest them in the 'R' in ASHRAE - refrigeration," Reindl, a speaker at the session, said. "We thought this would be an out of the box way to show them about processes, the science, taste and texture of food, home refrigeration."

His presentation will focus on the methods and cooling loads encountered in the ice cream industry.

Session chair Dan Dettmers notes that while ice cream is one of the simple pleasures of life, it also is one of the most complex frozen products available today.

"Unlike ice, which freezes in a crystalline structure, ice cream is an amorphous solid similar to glass," he explained. "Its structure is primarily air held in a complex lattice of sugars and fats. Likewise, the process of producing ice cream is far more complex than most frozen foods with variations from traditional ice cream to frozen novelty bars and cakes."

Other sessions related to refrigeration include:

- Energy Use Analysis in Retail and Small/Medium Office Applications, Sunday, Jan. 25
- Alternative Refrigerants for Residential Refrigerator-Freezers, Sunday, Jan. 25
- Walgreens Pursuit of a Net-Zero Store, Sunday, Jan. 25
- Refrigeration for Craft Brewing, Monday, Jan. 26
- Demand-Defrost Controller for Walk-in Boxes, Monday, Jan. 26
- Energy Efficiency of Novel and Conventional Compressors using Low-GWP Refrigerants, Tuesday, Jan. 27
- Environmentally Sound Refrigeration, Wednesday, Jan. 28
- Supermarket Hot Gas Defrost Piping Guidelines for Best Performance, Reliability and Leak Reduction, Wednesday, Jan. 28
- Energy Reducing Design Developments for Ice Arenas, Wednesday, Jan. 28

## ASHRAE 2015 Winter Conference Technical Program: New Tracks Address Industry's Big Needs

**ATLANTA**— With more than five new tracks, 100 sessions and 400 speakers, the Technical Program at ASHRAE's 2015 Winter Conference capitalizes on the wide range of systems, equipment and applications in the Chicago area to present several relevant and timely programs.

"With the Conference being held in the big city of Chicago, the Technical Program itself is going big with a focus on big projects, the big picture and big impacts with the intent of presenting big results for engineers, contractors, manufacturers and building professionals," Doug Cochrane, Conference chair, said.

The Conference takes place Jan. 24-28, Palmer House Hilton, while the ASHRAE co-sponsored AHR Expo is held Jan. 26-28, McCormick Place. Complete Conference information and registration can be found at [www.ashrae.org/chicago](http://www.ashrae.org/chicago), and Expo information at [www.ahrexpo.com](http://www.ahrexpo.com).

The Technical Program begins Sunday, Jan. 24, with special hour-long interactive sessions with audience participation, followed by a networking coffee break. It concludes Wednesday, Jan. 28.

The Technical Program offers over 200 Professional Development Hours, as well as Continuing Education Units, which can be applied toward a Professional Engineering license.

The Conference features papers and programs for eight tracks, which address trends in the industry and also are relevant to the design community in the area.

The tracks are:

- **Systems and Equipment:** The proper selection of HVAC&R for a job is critical. This track covers considerations for a proper functioning system.
- **Fundamentals and Applications:** Basic HVAC&R principles are key in any project. Knowing what they are helps to apply in specific projects. This track covers a broad array of pertinent information.
- **New! Industrial Facilities:** Manufacturing and processes can have different requirements for HVAC&R. This track explores design and practices for industrial buildings.
- **New! Large Buildings: Mission Critical Facilities and Applications:** Facilities like data centers have different characteristics. This track looks at what is required for these unique applications.

## NEWS FROM THE HOME OFFICE CONTINUED...

- **Energy Efficiency:** Energy efficiency is on everyone's mind as energy costs continue to rise. This track covers an array of considerations to help drive toward net zero energy.
- **New! Life Safety:** This encompasses egress, sprinklers, alarms, emergency lighting, smoke barriers and special hazard protection. This track provides the tools for all the factors to consider in life safety and lessons learned.
- **New! Design of Energy and Water Efficient Systems:** The trend is to green sustainable buildings. This track looks at what works and what doesn't to attain these efficient systems.
- **New! Hospital Design and Codes:** Healthcare design takes into account some unique aspects. This track explores design and code requirements to ensure patient comfort.

### Stanford engineers invent high-tech mirror to beam heat away from buildings into space

Chris Cesare—Stanford engineers have invented a revolutionary coating material that can help cool buildings, even on sunny days, by radiating heat away from the buildings and sending it directly into space.

A team led by electrical engineering Professor Shanhui Fan and research associate Aaswath Raman reported this energy-saving breakthrough in the journal *Nature*.

The heart of the invention is an ultrathin, multilayered material that deals with light, both invisible and visible, in a new way.

Invisible light in the form of infrared radiation is one of the ways that all objects and living things throw off heat. When we stand in front of a closed oven without touching it, the heat we feel is infrared light. This invisible, heat-bearing light is what the Stanford invention shunts away from buildings and sends into space.

Of course, sunshine also warms buildings. The new material, in addition dealing with infrared light, is also a stunningly efficient mirror that reflects virtually all of the incoming sunlight that strikes it.

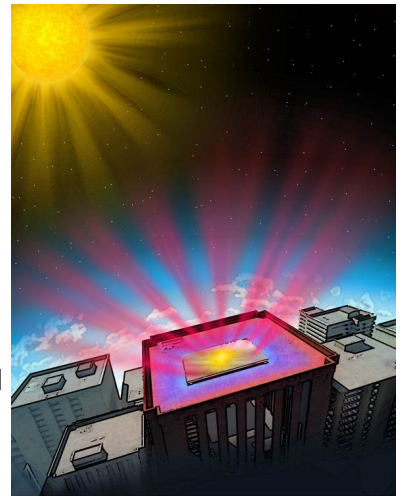
The result is what the Stanford team calls photonic radiative cooling – a one-two punch that offloads infrared heat from within a building while also reflecting the sunlight that would otherwise warm it up. The result is

cooler buildings that require less air conditioning.

"This is very novel and an extraordinarily simple idea," said Eli Yablonovitch, a professor of engineering at the University of California, Berkeley, and a pioneer of photonics who directs the Center for Energy Efficient Electronics Science. "As a result of professor Fan's work, we can now [use radiative cooling], not only at night but counter-intuitively in the daytime as well."

The researchers say they designed the material to be cost-effective for large-scale deployment on building rooftops. Though still a young technology, they believe it could one day reduce demand for electricity. As much as 15 percent of the energy used in buildings in the United States is spent powering air conditioning systems.

In practice the researchers think the coating might be sprayed on a more solid material to make it suitable for withstanding the elements.



"This team has shown how to passively cool structures by simply radiating heat into the cold darkness of space," said Nobel Prize-winning physicist Burton Richter, professor emeritus at Stanford and former director of the research facility now called the SLAC National Accelerator Laboratory.

A warming world needs cooling technologies that don't require power, according to Raman, lead author of the *Nature* paper. "Across the developing world, photonic radiative cooling makes off-grid cooling a possibility in rural regions, in addition to meeting skyrocketing demand for air conditioning in urban areas," he said.

Read the rest of the story here:

**Stanford High-Tech Mirror**

## NEWS FROM THE HOME OFFICE CONTINUED...

### ThyssenKrupp develops the world's first rope-free elevator system to enable the building industry face the challenges of global urbanization

Press release, Nov. 27, 2014 - 13:01 PM (CET)

The era of the rope-dependent elevator is now over, 160 years after its invention. ThyssenKrupp places linear motors in elevator cabins, transforming conventional elevator transportation in vertical metro systems. MULTI elevator technology increases transport capacities and efficiency while reducing the elevator footprint and peak loads from the power supply in buildings. Several cabins in the same shaft moving vertically and horizontally will permit buildings to adopt different heights, shapes, and purposes. The first MULTI unit will be in tests by 2016.

Presented today, MULTI is ThyssenKrupp's latest offering in its extensive repertoire of elevator technologies, representing a landmark revolution in the elevator industry and a new and efficient transport solution for mid and high-rise buildings. Now, the long-pursued dream of operating multiple cabins in the same elevator shaft is made possible by applying the linear motor technology of the magnetic levitation train Transrapid to the elevator industry. MULTI will transform how people move inside buildings, just as the recently introduced ThyssenKrupp's ACCEL, which also applies the same linear motor technology, is set to transform mobility between short distances in cities and airports.

In a manner similar to a metro system operation, the MULTI design can incorporate various self-propelled elevator cabins per shaft running in a loop, increasing the shaft transport capacity by up to 50% making it possible to reduce the elevator footprint in buildings by as much as 50%.

Using no cables at all, a multi-level brake system, and inductive power transfers from shaft to cabin, MULTI requires smaller shafts than conventional elevators, and can increase a building's usable area by up to 25%, considering that, depending on the size of the building, current elevator-escalator footprints can occupy up to 40% of the building's floor space. The overall increase in efficiency also translates into a lower requirement for escalators and additional elevator shafts, resulting in significant construction cost savings as well as a multiplication of rent revenues from increased usable space.

The significant extra space available is only one of

MULTI's advantages. Although the ideal building height for MULTI installations starts at 300 metres, this system is not constrained by a building's height. Building design will no longer be limited by the height or vertical alignment of elevator shafts, opening possibilities to architects and building developers they have never imagined possible.

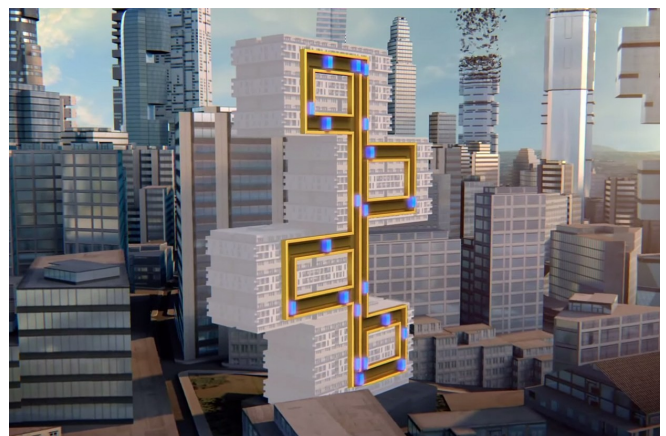
MULTI is based on the concept of ThyssenKrupp TWIN's control system and safety features, but includes new features such as new and lightweight materials for cabins and doors, resulting in a 50% weight reduction as compared to standard elevators, as well as a new linear drive – using one motor for horizontal and vertical movements.

Commenting on this momentous breakthrough in the company's history of innovations at the global headquarters of ThyssenKrupp in Essen, Germany, Andreas Schierenbeck, CEO of ThyssenKrupp Elevator AG said, "As the nature of building constructions evolve, it is also necessary to adapt elevator systems to better suit the requirements of buildings and high volumes of passengers. From the one dimensional vertical arrangement to a two dimensional horizontal/vertical arrangement with more than one or two cabins operating in each shaft, MULTI represents a proud moment in ThyssenKrupp's history of presenting cutting-edge transport technologies that best serve current mobility needs".

Operating on the basic premise of a circular system, such as a paternoster, MULTI consists of various cabins running in a loop at a targeted speed of 5 m/s, enabling passengers to have near-constant access to an elevator cabin every 15 to 30 seconds, with a transfer stop every 50 metres.

Read the rest of the story here:

#### **MULTI Elevator Story**



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### **ASHRAE Region IX Dinner Chicago Winter Meeting**

During the Winter and Annual Meetings we typically get together as a Region for dinner one night. This has traditionally been on Monday evening due to other ASHRAE events. For this year's Winter Meeting in Chicago we are going to try and do something a little different and have the Regional Dinner on Sunday evening and it is a little later than normal. This is open to anyone in the region, so please pass this information on to the members of your chapter. This is an 11 minute walk (according to Bing) from the Palmer House. For those leaving from the Palmer House, we will meet in the lobby around 7:30pm and we will leave promptly 7:45pm.

#### Region IX Dinner

Date: **Sunday, January 25<sup>th</sup>**

Time: **8:00pm**

Location: Giordano's  
223 W. Jackson Boulevard  
Chicago, IL 60606  
(312) 583-9400

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