American Society of Heating , Refrigerating, and Air-Conditioning Engineers

Volume 46, Issue 4

November 2010

QUAKER CITY CLIMATE

INSIDE THIS ISSUE:

Downtown Club

6th & Chestnut Streets
Philadelphia, PA 19106
(215) 925-5472

For Directions : Click Here
For registration: Click Here.

Fees:
ASHRAE Member—Non Chapter Member : $55

Non-ASHRAE Member: $55

Phila. Chapter Member: $45

Student Member: $20

Young Engineers in ASHRAE: $35

COMMUNICATING TECHNICAL ISSUES WITH LEVITY AND PANACHE

JOINT MEETING WITH ENGINEERS CLUB, CMAA, AND ASCE

Our next dinner meeting is scheduled for **Thursday** November 4, 2010 at The Downtown Club. It is a joint event with the Engineers Club, CMAA, & ASCE. There will also be a Humidity Control Seminar in the afternoon.
The event schedule is as follows :

- Seminar 1:30-4:30
- Social Hour 5:30pm-6:30pm
- Dinner 6:30
- Presentation 7:30pm

After dinner presentation will be by Professor Emeritus Fred H. Kulhawy, Dist.M.ASCE from the School of Civil and Environmental Engineering at Cornell University who is presenting "Communicating Technical Issues with Levity and Panache"

Humidity Control Seminar

Humidity Control Seminar instructed by Lew Harriman, Fellow, ASHRAE sponsored by Associated Steam Specialty Company and H.C. Nye Company. The seminar cost is $250 and awards 3 PDH units.

This course will provide knowledge for interested technical professionals to avoid classic problems in buildings caused by excessive or uncontrolled humidity.

Lew Harriman is Director of Research at Mason-Grant Consulting in Portsmouth, NH. He is an active member of ASHRAE Technical Committees 1.12 (Moisture Management in Buildings) and TC 8.12 (Desiccant Dehumidification Systems and Components). He was the Lead Author and Project Manager for The ASHRAE Humidity Control Guide, and for the ASHRAE Guide for Buildings in Hot and Humid Climates

ASHRAE Technology Awards Recognize Innovation

In keeping with ASHRAE's high standard for engineering excellence, the ASHRAE Technology Award provides an opportunity for members to gain recognition for their projects and to set an example for the engineering community on how to apply sound and innovative engineering concepts to practice.
The strength of this award program is based on the submission requirement that the concepts employed must be proven through actual operating data. And that is what makes an ASHRAE Technology Award recipient and project such an outstanding example for other ASHRAE members, associated professionals and societies worldwide as well as building and facility owners.
"Because of the strength of the ASHRAE Technology Award program, the recognition and exposure that come with receiving one are great tools to help sell the firm's expertise when making proposals, as well as attract top-of-the-class prospective employees," said Frédéric Genest, P.E., recipient of the Award of Engineering Excellence in 2005. "Also, it gives some recognition to the owner for his involvement in the winning project, recognition they rarely get. In short, the time spent to write the application pays for itself a hundredfold."
The Program applies to new and retrofit applications in seven categories: Commercial Buildings, Institutional Buildings, Health Care Facilities, Industrial Facilities or Processes, Public Assembly, Residential and Alternative or Renewable Energy Use, with separate categories for New and Existing Buildings. Award applications are judged with respect to energy efficiency; indoor air quality, innovation, operation and maintenance, cost effectiveness, environmental impact and quality of presentation.
The process for the ASHRAE Technology Awards starts at the Chapter level; entries will be due in March 2011. Chapter Competition winners will be judged in the Regional Technology Award Competition. Regional winners will then submit a long form application for the Society Technology Award Competition.
For more information and applications, go to www.ashrae.org/publications/detail/14704 or e-mail the Philadelphia Chapter Technology Transfer Chair: Mark Maguire, c021bog4@ashrae.net.

PRESIDENTS MESSAGE:

November 4th marks the first time in the recent past that the chapter has held a half-day seminar followed by a dinner meeting at the same location. We hope this makes it less confusing by reducing the number of separate invitations you receive for these events. In addition, this gives our membership the opportunity to attend both the seminar and meeting and only have one night out of the month devoted to ASHRAE.

The dinner meeting was a joint effort between ASHRAE, the Engineers Club, the Construction Managers Association of America, and ASCE. The dinner presentation on technical presentation skills should be of interest to all of us. Having sat through (and given) presentations that didn't keep the audience attention as well as they could have, I'm looking forward to picking up some good techniques.

Best Regards,

John Pardekooper
215-436-5802
c21@ashrae.net

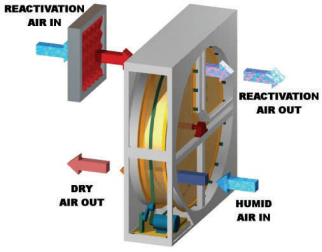
Benefits of Desiccant Dehumidification During and After School and Hospital Construction

This article was submitted by Bob Miller of Coward Environmental Systems on behalf of Munters. Articles highlighting novel HVAC technologies should be submitted to Chapter Technology Transfer Committee Chair Mark Maguire (c021bog4@ashrae.net) for consideration in future newsletters.

School and hospital construction projects have two things in common. For both building types, construction timelines are critical. Schools projects usually have to be completed before a new academic year as students and teachers will expect classrooms to be ready. Hospitals are also expected to open on a specified date as doctors and patients have treatments and procedures scheduled. Also, building owners fear the growth of mold and/or proliferation of bacteria and viruses. Schools want students healthy and awake and hospitals want patients to recover quickly. Good indoor air quality (IAQ) plays a large part of accomplishing both goals. This article will focus on how desiccant dehumidifiers can help remedy these concerns in both the construction and occupancy phase of a project.

A desiccant dehumidifier has the ability pull large amounts of moisture out of an air stream (Figure 1). The advantage of desiccant technology is that it can reduce the dewpoint (vapor pressure) of air well below what is typical of a chilled water coil or a packaged DX system. The process uses a rotating wheel coated with a desiccant. As the process air stream passes through the wheel, the desiccant will adsorb large amounts of moisture, dropping the air's dewpoint and vapor pressure, while adding sensible heat at the same time. As the wheel becomes laden with moisture, the wheel rotates into another airstream that is heated in order to release the moisture or "reactivate" the desiccant prior to rotating back into the process air stream. For our discussions, the process air stream is equal to the outdoor air we are bringing into the building. By supplying air into a building that has a lower dewpoint than the surrounding environment, the air can keep the building dry. *(continued on the next page)*

Benefits of Desiccant Dehumidification During and After School and Hospital Construction *(Cont.)*



Schools and hospitals have critical construction timelines. Contractors may be able to work fast, but they are limited by the materials they use and more specifically, how long it takes those materials to dry. Concrete takes time to cure, wall "mud" takes time to set up and paint takes time to dry. Other exterior forces are also out of the contractor's control. Rain can get sheetrock wet or flood the construction site and damage materials such as wood flooring. And something as common as a string of high humidity days can slow the drying process down. Any contractor will agree that the faster concrete cures, or paint dries or fire suppressant coatings set, the quicker they can continue the building process. Valuable time is lost due to normal drying cycles based on ambient temperature and humidity. By employing a desiccant dehumidifier during construction, drying times are reduced significantly. Air is provided to a space with a lower vapor pressure than the surrounding air, the water that is inside concrete, or fire proofing or sheetrock, will quickly escape out of those products and dry in less time. For example, experience has shown that indoor concrete under normal ambient conditions can take 37 days to dry. But with the properly sized desiccant unit blowing dry air across the slab, it can dry in as little as 14 days. Drywall compound normally requires 2-3 days to cure, but with a desiccant dehumidifier, it can be ready to sand in as little as 24 hours regardless of the ambient temperature and humidity. By using a desiccant dehumidifier, the drying of the building — a process in itself that does not add value, but requires time — can be shortened substantially, saving the contractor money and keeping the project on schedule.

Another advantage of keeping the building dry during construction is that it will prevent moist materials from becoming harbors of mold and mildew. Everyone has seen the wet job site with standing water inside the building prior to the sheet rock and other materials being installed. If this water comes into contact with the sheetrock, or is trapped behind a wall, it can provide the moisture needed for mold to begin growing in places that will be hard to find.

By keeping the construction space dry, mold will not be able to grow. This is the first step toward good IAQ during occupancy.

These techniques can be employed by the contractor on his own or required per the plans and specifications by the architect or engineer. However, employing desiccant technology during the occupancy phase begins with the HVAC engineer and the overall design concept.

Design professionals are faced with ever increasing challenges when designing and operating educational and medical facilities. ASHRAE Standard 62.1 prescribes the amount of outside air (OA) that must be introduced into the building to ensure good IAQ. Over the past 15 years, many different designs have been implemented, some successfully and some less so. In 2007 ASHRAE released the newest version that describes the most successful approach and should be considered the best design practice for processing ventilation air.

The HVAC system chosen may be a centralized system, such as a chiller plant, with ductwork distributing air to each space through fan coil units, VAV boxes or a chilled beam system. The design may also call for a decentralized system where each space has its own cooling/heating device such as a single zone water source heat pump (WSHP). ASHRAE 2007 HVAC Application Handbook (6.7) explains, "Although most centralized and decentralized systems are very effective at handling the space sensible cooling and heating load, they are less effective (or ineffective) at handling ventilation air and the latent loads. As a result, a dedicated outdoor air system (DOAS) should be used." Further on, ASHRAE states that DOAS should be used to also control the space moisture levels. "It is preferable, however, to introduce the outdoor air at a lower humidity ratio than the desired space humidity ratio, to allow the zone HVAC unit to handle only the space sensible load." This system divides out the moisture component from the room's A/C system to conquer the many issues associated with building moisture control, energy efficiency, IAQ and others. This method is a change from traditional engineering.

Historically, engineers wanting to use a DOAS would plan to use a system that would deliver OA at a "neutral" condition, 75°F and 55°F dewpoint. This delivered condition is commonly associated with maintaining 75°F and 50% RH. A simple DOAS can accomplish these conditions during the cooling season by processing OA through a cold coil down to a 55°F saturated condition and then reheating the air back up to 75°F, ensuring the air is delivered at 55°F dewpoint. However, introducing OA at a 55°F dewpoint will not hold the space at 50% RH. A space will generate its own additional moisture from the occupants, space processes (such as in a lab) and infiltration. When carpets are mopped or steamed clean on a regular basis that will introduce a large amount of additional moisture to the space. All of this additional moisture must be removed from the space in order to control RH within the recommended 40-60% range.

The best design practice uses a DOAS to manage the latent load and the A/C system to handle the sensible load only. This method not only increases the HVAC system efficiency, but will provide superior IAQ and moisture control.

Using a desiccant dehumidifier as the DOAS will allow the engineer to design a unit that will "over-dry" the outside air past the required space dewpoint set point and allow the building to control the moisture and thus the 50% RH. This will make certain the proper space moisture content is maintained and will prevent mold growth as well as bacteria and virus proliferation, ensuring good IAQ.

Philadelphia Future City Competition

The mission of the National Engineers Week Future City Competition is to provide a fun and exciting educational engineering program for middle school students that combines a stimulating enginering challenge with a "hands-on" application to present their vision of a city of the future. The Future City Competition, a school based program for middle school students, is held from September through February every year. The National Future City Competition is sponsored in part by the National Engineers Week Foundation, a consortium of professional and technical societies and major U.S. corporations. Major funding comes from Bentley Systems, Incorporated, Ford Motor Company and Shell. The National Engineers Week Foundation, a formal coalition of more than 100 professional societies, major corporations and government agencies, is dedicated to ensuring a diverse and well-educated future engineering workforce by increasing understanding of and interest in engineering and technology careers among young students and by promoting pre-college literacy in math and science. Engineers Week also raises public understanding and appreciation of engineers' contributions to society. Founded in 1951, it is among the oldest of America's professional outreach efforts. The competition is made possible through the efforts of a large number of dedicated volunteers. If you want a rewarding experience and would like to help, please use our on-line sign up Volunteer Opportunities

Competition Overview

Delaware Valley Engineers Week annually hosts the Philadelphia Regional Future City Competition as part of the Engineers Week activities. The program is a 501.c.3 educational outreach program of National Engineers week. It is one of 40 Regional programs conducted throughout the country with the goal to introduce middle school students to the engineering profession. The Future City Program was recently added to the National Association of Secondary School Principals' National Advisory List of Student Contests and Activities.

For more information visit Here

Volunteers are still needed. Click here for registration information

ASHRAE Philadelphia Chapter

Humidity Control Seminar

a half-day workshop on Thursday, November 4 (1:30–4:30pm) on Humidity Control at the Downtown Club (6th and Chestnut Streets in Philadelphia, PA). The seminar cost is $250 and awards 3 PDH units, which contribute toward the Pennsylvania PE continuing education requirement.

This course provides a firm foundation for the knowledge which helps interested technical professionals avoid classic problems in buildings caused by excessive or uncontrolled humidity.

Course Outline:

1. The Big Picture - Overall Principles and Roles of Each Team Member
2. Brief Psychrometric Review - From the Perspective of Humidity Control
3. 5-Step Design Procedure - The Most Efficient Path to Economical System Designs
4. Estimating Dehumidification Loads & Sizing Equipment Using the Included Spreadsheet
5. Understanding Equipment Behavior & Locating Sensors and Controls

Course Instructor - Lew Harriman, Fellow, ASHRAE

Lew Harriman is Director of Research at Mason-Grant Consulting in Portsmouth, NH. He is an active member of ASHRAE Technical Committees 1.12 (Moisture Management in Buildings) and TC 8.12 (Desiccant Dehumidification Systems and Components). He was the Lead Author and Project Manager for *The ASHRAE Humidity Control Design Guide*, and for the *ASHRAE Guide for Buildings in Hot & Humid Climates*.

Thanks to our sponsors: Associated Steam Specialty Company and H.C. Nye Company.

Chapter Technology Transfer Committee

ASHRAE Milton W. Garland Award

ASHRAE offers two competition-based awards encouraging the design of innovative refrigeration systems. The Milton W. Garland Commemorative Refrigeration Award for Project Excellence recognizes non-comfort refrigeration systems. The Refrigeration Comfort Cooling Award for Project Excellence is oriented toward comfort refrigeration systems.

The Philadelphia Chapter Technology Transfer Committee is currently accepting applications for both competitions for 2011.

The Garland Award competition is open for the design of mechanical refrigeration machinery for applications other than human comfort: e.g., food processing/preservation, industrial/manufacturing processes, life support in extreme environments, recreational facilities.

The Refrigeration Comfort Cooling Award competition is open for the design of mechanical refrigeration machinery for human comfort applications.

Both submissions must be made within 36 months of the initial operating date of the system, and will be judged on the following criteria:

- Complexity of Problem
- Solution Concept
- Architectural Integration
- Originality
- Achievement of Performance Criteria
- Energy Effectiveness
- Budget Compliance

Ease of Maintenance

Additional information can be obtained from Mark Maguire, Chapter Transfer Technology Chair (c021bog4@ashrae.net).

ASHRAE Offers Certification as Commissioning Process Management Professional

ASHRAE has developed the Commissioning Process Management Professional (CPMP) program in close collaboration with APPA, Building Commissioning Association (BCA), Illuminating Engineering Society (IES), National Environmental Balancing Bureau (NEBB), Sheet Metal and Air-Conditioning Contractors' National Association (SMACNA), Testing, Adjusting and Balancing Bureau (TABB), and the University of Wisconsin - Madison. To continue to improve building performance, experts agree that the commissioning process should be implemented in new and existing buildings – and the correct management of that process is critical. The purpose of this certification is to help building owners, developers, standards writing agencies, and others assess the capability of individuals to manage the whole building commissioning process. The Commissioning Process Manager oversees and coordinates the commissioning process and communicates on behalf of the building owner with the commissioning provider and the commissioning team. For some projects, the commissioning provider may perform the function of the commissioning process manager, but for other projects, another individual performs these functions.

After filing an eligibility request and being approved by ASHRAE, a candidate takes an electronically-administered exam at an Applied Measurement Professionals (AMP) testing center. After passing the 2 to 2½ hour test, the candidate can then claim to be ASHRAE-certified in that area. The CPMP examination is $295 for ASHRAE members and $415 for non-members.

ASHRAE also offers other professional certification programs:

- Building Energy Assessment (coming in February 2011);
- Building Energy Modeling;
- Healthcare Facility Design;
- Operations and Performance Management;
- High-Performance Building Design;

ASHRAE offers a recertification process, including an ethics statement and a continuing education requirement. Additional information, including a candidate guidebook, is at ashrae.org/certification or email the Philadelphia Chapter Technology Transfer Committee chair (Mark Maguire, c021bog4@ashrae.net).

Philadelphia Chapter Programs Calendar 2010-2011

Date	Location	Topic	Theme	Joint Meeting
10/6/2010	Penn's Landing Caterers	Fan Wall Technology		SMCA
11/1/2010 - 11/2/2010	Pennsylvania Convention Center	Engineered Plumbing Exposition 2010		
11/4/2010	Downtown Club	Communicating Technical Ideas with Levity	Research Promotion	CMAA, ASCE, Engineers Club
12/9/2010 Breakfast	Union League	Energy Simulation Programs, presennted by ASH-RAE Distinguished Lecturer Drury Crawley, PhD		
1/20/2010	Wells Fargo Center	Flyers VS Ottawa Social		
2/10/2010	Dave & Buster's	Noise & Vibration	Membership/YEA/Student Night	
3/10/2011	Fisher's Tudor House	Design Build for Green Buildings	Trade Show	SMCA
4/13/2011	Holiday Inn (4th & Arch)	VAV System Design by ASHRAE Past President & Distinguished Lecturer Bill Coad, PE	Student Night	
5/12/2011	Holiday Inn (4th & Arch)	Variable Primary Flow Chilled Water Systems, presented by ASHRAE Vice President and Distiguished Lecturer William Bahnfleth, PhD, PE	Past President's Night	
TBD	NVCC	Golf Outing		
TBD	TBD	2011-2012 Planning Meeting		

*** Program calendar is subject to change. Please refer to ASHRAE Philadelphia Website for up to date information.*

October Meeting: Fan Wall Technology

The Philadelphia Chapter of the American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc.

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ASHRAE Philadelphia Website

 Any member with material to submit for inclusion in the *Climate* can send the information to:

Matthew Trinsey
Clive Samuels & Associates, Inc.
1 Independence Way
Princeton, NJ 08540
(P) 609-627-7983
c021ne@ashrae.net

Material can include letters to the editor, member news, upcoming events, comments on chapter programs or issues, etc.

MEMBERSHIP PROMOTION

What is the Affiliate Membership Grade?

Affiliate Membership is for young professionals who are age 30 or younger and are brand new to ASHRAE.

Affiliate Members can take advantage of discounted dues for their first three years of membership for a total savings of $330.

- First Year - $50
- Second Year - $70
- Third Year - $90

At the end of year three Affiliate Members are converted to full dues paying Associate Members.

Affiliate Membership includes all Member benefits except for the ASHRAE Handbook and the opportunity to vote in the Society annual ballot.

Though Affiliate Members can't hold positions in the Chapter or Society, they can serve on local Chapter committees such as Membership Promotion and Technology Transfer to learn the volunteer role.

Click Here to register as an affiliate Member today. Please note you must enter your date of birth in order to receive the Affiliate option.

If you know a young professional 30 years of age or younger please share this information with them and encourage them to take advantage of what ASHRAE has to offer.

James Piscopo
Membership Promotion Chair

New Members:

Annie Bevan – Associate Member

Jeremy Kuhre – Associate Member

New Student Members:

Truong Xuan Nghiem – Student Member

Nana Boateng – Student Member

Jennifer Bullock – Student Member

Abdul Muneem – Student Member

Jesutofunmi Ogunlokun – Student Member

Joseph Martin – Student Member

Gregory Greenly – Student Member