



2009

**MAEBA  
Board of Directors**

**Matthew Sano  
President**

**Leo Foster  
Vice President**

**Thomas C. DeMusis  
Technical Committee  
Chairman**

**Timothy Brink  
Secretary**

**William F. Reardon  
Treasurer**

**Vincent Del Vacchio**

**John McNeila**

**J. Patrick McDonnell**

**Patrick Pottichen**

**Gary Luthé**

**William Doskow**

## Chilled Beam Systems

By: Ted Salkin, PE, LEED

You may soon see chilled beam systems installed in new buildings. This technology has been popular in Europe for several years, and offers several benefits in this time of Green Buildings and sustainability.

We have started commissioning chilled beams on a few projects, and this design is catching on with many engineers and facilities here in the US. It is an energy efficient alternative to VAV systems.

### Background:

Chilled beams are cooling units flush mounted in ceiling grids, consisting of a fin/tube coil encased in a cabinet. The term "beam" is a bit misleading as these units have nothing to do with a beam, but rather look similar to large linear slot diffusers or ductless mini-split system fan coil cassettes. Nor are these units con-

sidered radiant cooling panels.

However, chilled beams can actually provide both heating and cooling, with no fans, moving parts, electrical components, or internal controls. They operate similarly in concept to the old perimeter induction units installed in 1950's and 1960's era office buildings.

All Chilled beams receive chilled water from the buildings central chiller plant to produce cooling.

There are two types of chilled beams: passive and active. Passive beams have only a chilled water coil and depend on natural convection to convey air currents from the room across the coil for cooling effect.

Active type chilled beams receive a small amount (about 50 cfm each unit) of medium pressure air from a central AHU to provide motive velocity to induce room air from the room across the internal chilled water coil in convective action.

Continued on Page 3

## 2009 MAEBA Educational Seminar

By Trish Casey

MAEBA held its annual Re-certification and Educational Seminar at the Hershey Lodge in Hershey, PA on September 13-14, 2009. The annual event began with a dinner reception co-sponsored by AiRNABB, LLC and DP2 LLC.

On Monday, September 14<sup>th</sup>, safety professional, John Connolly began the morning with a presentation on "Responding to an Emergency", followed by John A. Adams, Esq. of Susanin, Widman & Brennan, P.C. on "Mechanics Lien Law".

The seminar continued with William Dougherty from True & Associates, speaking on "The 10 Criti-

cal Business Insurance Mistakes to Avoid".

The technical presentations began with Steve Rominger of Hays Fluid Controls on Hydronic Balancing. Mr. Rominger discussed the importance of Hydronic Balancing, code requirements, energy conservation and control functionality. He discussed balancing valve selection and application, manual balancing valve technology, variable orifice vs. venturi design system performance. Automatic balanc-



Andy Stadheim, AiRNAB

### 2010 NEBB Annual Conference



**Hyatt Regency  
Coconut Resort & Spa  
Bonita Springs, Florida  
November 4-6, 2010**

## 2009 Educational Seminar in Hershey

Continued from Page 1

ing valve technology and design variations.

Milt Kirkman and Jacinto Oliver of TKO Company spoke on Phoenix Controls and Strobic Tri-Stack Fans. Phoenix Venturi Valves with cutaway valve versus other flow devices, laboratories control basics, energy savings concepts in labs along with vivariums, isolation rooms and other spaces were some of the topics Mr. Kirkman talked about. Mr. Oliver discussed Strobic Fans with a scaled model. Principles of mixed-flow impellers and Strobic (high-plume and dilution) exhaust fans.

During lunch, MAEBA held their annual meeting. One highlight of the meeting was the William G. Eads, P.E. Award, which was presented to Dietrich Rose, P.E. of Independent Balancing Co. for his many years of commitment and service to the balancing industry. Mike Dolim of NEBB gave a national update along with presenting a NEBB 25 Year Pin to William Duskow of Baltronix, Inc. During lunch, there were numerous vendors that displayed their latest products including AiRNAB, LLC, DP2 LLC, Sikora Data Technology, True & Associates, TKO Company and Hays Fluid Controls. *MAEBA thanks all vendors for their continued support.*



## MAEBA 2010 Seminar back to A.C.

**Hold the date!**

The MAEBA 2010 Recertification and Educational Seminar will be held September 19—20, 2010 in Atlantic City, NJ.



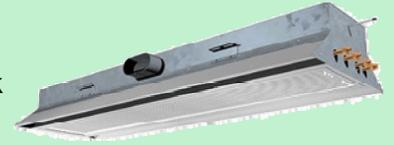
# Chilled Beams

Continued from Page 1

This air is usually conditioned 100% outside air from the AHU, is directed through nozzles for induction effect, and provides the required ventilation and latent cooling.

Warm room air rises up to the ceiling mounted chilled beams where the air is then cooled by the coil and falls by gravity to floor level.

Chilled beams can also provide heating if 4-pipe units or seasonal change-over 2-pipe system is used. Primary air from the ventilation AHU can be heated. However, most designers will include a perimeter hot water heating system to work in conjunction with cooling-only chilled beams.

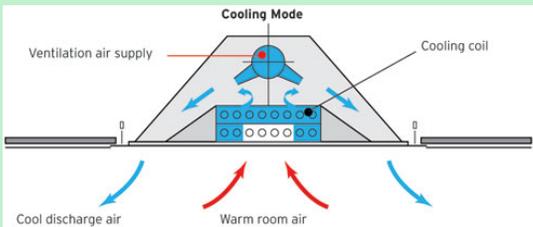


## **Sizing and Capacity:**

Chilled beam modules are typically 2 feet wide by 4, 6, or 8 feet long in physical dimensions. Each unit can provide in the range of 3000 – 6000 BTUH of total cooling from the combination of chilled water coil and the incoming primary air. A typical private perimeter office may use two – 6 foot long units centrally located in the ceiling.

## **Controls:**

Because of their exposed coils, chilled beams do not have internal drain pans and any condensation can drip down to the occupied space. Therefore it is important to prevent condensation by maintaining the cooling coil above the room dew point temperature. Latent cooling capacity is quite limited so chilled beams should only be installed in areas of high sensible heat ratio, such as offices.



To help prevent condensation, the entering chilled water temperature to the beam should be about 55 – 60 degrees F., and the primary conditioned ventilation air shall be above 60 degrees with low humidity.

Space thermostats sequence the chilled water modulating control valve at the beam's coil. The incoming primary air can be fed directly

from the air handler, or from a CV box. Static pressure at the nozzles can be rather low (0.5" wc) to achieve the induction effect. Humidity sensors can be used to automatically shut the chilled water valve if the dew point is too high.

## **Balancing Issues:**

Total airflow leaving the chilled beams is not an important variable. For active type beams, balancing would consist of adjusting the primary (ventilation) air to each chilled beam with standard volume dampers in the ductwork; and setting the balancing valve at chilled water coil. Water flow is typically only 1 to 2 gpm per unit.

## **Benefits of Chilled Beams:**

- Reduced ductwork: since only the minimum ventilation air quantity is needed in the building, the duct distribution system will consist of a network of relatively very small size ducts compared to a VAV system. A run-out to each chilled beam (50 cfm) may be 4" round, and duct mains and risers can also be quite small. Thus the construction cost of sheet metal is low.
- Reduced AHU sizes and fan energy: since the total primary air CFM needed is low, the AHU's will be small and the resulting fan energy much lower than a competitive VAV system.
- Reheat is not needed since there is no cold supply air entering the space and beams are self-regulating.
- Reduced deck to deck height and duct shaft space: with smaller ducts, the ceiling plenums can be shallow and shaft space reduced. This can save overall construction cost or free up space for other uses.
- Studies have indicated several other energy saving advantages compared to VAV or other HVAC systems.
- Reduced maintenance costs and long service life. Chilled beams can be outfitted with building services such as sprinkler heads, speakers, occupancy sensors, wiring troughs, and lights to make for an integrated modular ceiling assembly.

## **Disadvantages:**

- For a typical room, the purchase price and installed costs of chilled beams is higher than a comparable VAV box and ductwork.
- Few engineers and contractors have experience with this technology.
- At present, only a few manufacturers (mostly European) provide chilled beams, so cost and technical support may be a challenge.
- May not be an effective for areas with higher latent cooling loads such as classrooms, labs, assembly rooms.

## President Column

By: Matthew Sano, MAEBA President



NEBB national has proposed new testing procedures for candidates applying for its Professional and Technician status. The goal is to have computer-based testing at third party sites by 2010. Individuals will be allowed to test at a location and time that is more convenient for them. The NEBB Technicians testing will be entirely computer-based. The NEBB Professionals written examination will be computer based testing modules for the Error Finding and Report Preparation sections. Once developed and implemented, the on-line modules will become prerequisites that must be completed by all future TAB candidates seeking NEBB Certified Professional status.

The Professional hands-on test (practical examination) involving air and hydronic test rigs will still be performed at approved sites. The ultimate goal is to standardize the test which should lead to ANSI recognition.

Another change established by the NEBB Board was a requirement that all NEBB-certified projects in the year 2012 and beyond shall at least have on-site project supervision, by a NEBB Certified Professional or a NEBB Certified Technician. A Certified Firm may use any combination of manpower, including multiple non-certified technicians; however, it must designate and deploy on-site for each project either a NEBB Certified Professional or a NEBB Certified Technician. So every firm will need to start certifying their technicians by 2012.



MAEBA wishes everyone a Happy Holiday and a prosperous New Year. We look forward to seeing our firms at the MAEBA Semi-Annual Meeting on April 14, 2010.

## Resources for Engineers, Building Owners and Architects

NEBB exists to assist professionals in delivering high performance buildings. You can find many valuable resources on the NEBB website.

**Download NEBB Procedural Standards and access NEBB Specifications in TAB, Sound and Vibration, Building Systems Commissioning and Cleanrooms all FREE!**

Find other important information like NEBB Training & Seminars, purchase one of NEBB's publications or locate a NEBB Firm. Not every firm can be a NEBB Certified Firm. Stringent educational and experience requirements must be met to be considered a NEBB Certified Firm. Find all of these requirements on the NEBB website. Go to [www.nebb.org](http://www.nebb.org).



## Make Sure Your Employees Know The Lay of the Land

A balancing contractor may face many different safety and health situations due to the varying worksites and facilities they work in. Similar to construction sites, the hazards balancing contractors encounter may not be “created” by the contractor. The client facility may have confined spaces, elevated work areas, and other workplace hazards that could impact the work you do and the workers on your



crew. The facility may have large pieces of equipment, moving vehicles such as forklifts, or use toxic chemicals. It is very important to know and understand the

safety and health issues present in or on client facilities prior to entering the facility.

A safety-aware client facility will provide you with an “Outside Contractors Safety Program” that details the various hazards within the areas including warehouse, production, engineering, maintenance, etc. If not, make an effort

to learn as much as you can about the facility and any safety, health, or environmental concerns within. Request a meeting with the safety director or facility maintenance supervisor as a way to communicate on safety and health matters.

More importantly, train your employees to be aware of safety and health issues so they can protect themselves.

MAEBA members that are also SMCA members are eligible for OSHA 10 and 30 hour courses, Red Cross and First Aid training. To discuss your needs call John Connolly at 610-828-5738 or send an email to John at [jconnolly@maebanet.org](mailto:jconnolly@maebanet.org).

### MAEBA's New Website

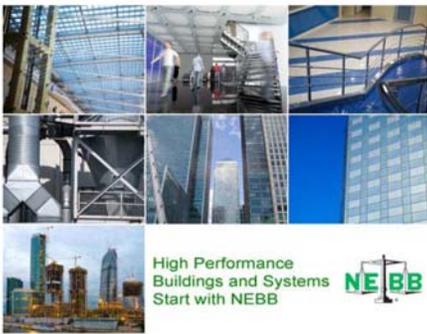
MAEBA has launched a new website. The new site has all MAEBA firms listed by state, a calendar of events (past and present), leaders of the chapter, award recipients and even a video on NEBB. Please visit our new site at [www.maebanet.org](http://www.maebanet.org).





Mid-Atlantic Environmental Balancing Association

1100 E. Hector Street Suite 185  
Conshohocken, PA 19428



## Calendar of Events

March 20, 2010 NEBB Supervisors Written Exam  
Given Locally in MAEBA Chapter

March 20, 2010 NEBB Supervisors Practical Exam  
Given Locally in MAEBA Chapter

March 20, 2010 NEBB Technicians Exams  
Given Locally in MAEBA Chapter

April 14, 2010 MAEBA Semi-Annual Meeting  
Conshohocken, PA

September 19-20, 2010 MAEBA Annual  
Recertification and Educational Seminar  
Atlantic City, New Jersey

Please visit [www.maebanet.org](http://www.maebanet.org) for additional  
dates of exams and seminars.

## MID-ATLANTIC ENVIRONMENTAL BALANCING ASSOCIATION

Chapter of the  
National Environmental Balancing Bureau

**MATTHEW SANO - PRESIDENT**  
**LEO FOSTER - VICE PRESIDENT**  
**THOMAS DEMUSIS - T.C.C.**  
**TRISH CASEY - CHAPTER COORDINATOR**

1100 E. Hector Street, Suite 185  
Conshohocken, PA 19428  
(610) 828-5738 Fax (610) 828-4625

