



Mississippi Valley Chapter Newsletter

January 2009

<http://www.mississippivalleyashrae.org>

Monthly Newsletter

Important Dates

- **February 19, 2009**
Current Feasibility of Using Bio-Mass and Bio-Gas to Reduce Facility Carbon Footprint
- **March 19, 2009**
Hydronics Seminar – All Day Event
- **March 31, 2009**
Student Scholarship Deadline
- **April 16, 2009**
1353-RP – Stability and Accuracy of VAV Box Control and Flow
- **May 7-9, 2009**
Region VI Conference – Des Moines
- **May 21, 2009**
Chapter Meeting - Elections
- **June 5, 2009**
Golf Outing

Current Feasibility of Using Bio-Mass and Bio-Gas to Reduce a Facilities Carbon Footprint

W. A. (Bill) Liegois, P. E.

Mr. Liegois is a Senior Project Manager with Stanley Consultants. Inc. of Muscatine, Iowa. He has a Bachelors of Engineering and a Masters of Science in Chemical Engineering from Vanderbilt University in Nashville, Tennessee. His professional experience since 1972 includes Research and Development, plant technical support in the petrochemical industry, and engineering design with Stanley Consultants since 1978. He is currently in charge of business activities for the industrial energy market. Stanley Consultants provides a wide variety of energy services from steam, hot water and chilled water, and electric generation, to energy audits and master planning.

February 19th Program

Location: The SteepleGate Inn
100 W 76th St
Davenport, IA

Program: Current Feasibility of Using Bio-Mass and Bio-Gas to Reduce a Facilities Carbon Footprint

Agenda: 4:30-5:30 Program
5:30-5:45 Meeting at SteepleGate
5:45-6:45 Dinner at SteepleGate

Menu: Stuffed Iowa Chop
Fresh vegetables
Red potatoes
Salad / dinner roll
German chocolate cake

ASHRAE's 2009 Satellite Broadcast Focuses on IAQ for Sustainable Buildings

ATLANTA – What's lean and green and clean all over? Your next sustainable building project and its indoor air quality, thanks to ASHRAE's upcoming satellite broadcast. The program, "Clean, Lean, and Green – IAQ for Sustainable Buildings," will take place April 22 from 1 to 4 p.m. EDT.

The free broadcast, sponsored by ASHRAE's Chapter Technology Transfer Committee with support from the U.S. Environmental Protection Agency, will challenge the building community to use good IAQ practices to create a more sustainable built environment. The program will highlight guidance from the publication IAQ Guide: Best Practices for Design, Construction, and Commissioning, developed collaboratively by ASHRAE, AIA, BOMA, EPA, SMACNA and USGBC.



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"Saving energy in buildings is paramount, and everyone in the buildings industry must do all they can to ensure sustainability in their projects," says Dave Shugars, Chair of the Satellite Broadcast committee. "But sustainability must never come at the expense of good indoor air quality. Proper operation and maintenance of buildings must be combined with enhanced IAQ practices to ensure healthy, productive indoor environments."

Participants who complete the participant reaction form online at www.ashrae.org/iaqbroadcast the week following the broadcast may be awarded three PDH credits.

The broadcast presenters and their topics are:

Martha Hewett, Director of Research, Center for Energy & Environment, Minneapolis, MN
Practical, Proven Strategies to Deliver Better IAQ

Hoy Bohanon, P.E., Owner and Manager of Bohanon Engineering, PLLC, Winston-Salem, NC
Improving Your IAQ and Reducing Your Energy Costs through HVAC Design

H.E. Barney Burroughs, Owner and CEO of Building Wellness Consultancy, Inc, Atlanta, GA

Keeping Buildings Clean: Avoiding and Building Control of Contaminants to Attain and Maintain IAQ Acceptability

George DuBose, Certified General Contractor, Liberty Building Forensics Group, Orlando, FL

Avoiding Costly IAQ Problems in the Building Envelope

John McFarland, P.E., Director of Engineered Systems, WorkingBuildings, LLC, Atlanta, GA

Integrating Good IAQ into the Design & Construction Process

For more information about the broadcast, please call (678) 539-1206, visit www.ashrae.org/iaqbroadcast or e-mail ashrae-satellitebroadcast@ashrae.org. Online registration for satellite site coordinators and Webcast viewers will begin March 2, and viewer registration will begin March 16. There is no fee for registration.

New Standard 189 Committee to Hold First Meeting in Chicago at ASHRAE Winter Conference

ATLANTA - The newly expanded committee tasked with writing the nation's first standard on high-performing green buildings has begun work again. The committee for proposed Standard 189.1, Standard for the Design of High-Performance Green Buildings Except Low-Rise Residential Buildings, will hold its first meeting at ASHRAE's 2009 Winter Conference in Chicago on Tuesday, Jan. 27 at 8 a.m.

"The committee for Standard 189.1 is stronger than ever," says Kent Peterson, chair of the Standard 189.1 committee and ASHRAE Presidential Member. "The new committee roster brings a wide spectrum of green building expertise to bear on the standard's content in keeping with ASHRAE's commitment to excellence in consensus standards development. ASHRAE and its partners look forward to working with the new committee to develop guidance that will minimize a building's impact on the environment."

The committee has been expanded to 34 voting members after a recent call for members to broaden the variety of industries, designers and code officials participating.

Proposed Standard 189 is being developed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) in conjunction with the Illuminating Engineering Society of North America (IESNA) and the U.S. Green Building Council (USGBC). This is the first such code-intended green building standard in the United States.

Meant to provide minimum criteria for green building practices, the standard is applicable to new commercial buildings and major renovation projects. When completed, it will address energy efficiency, a building's impact on the atmosphere, sustainable sites, water use efficiency, materials and resources, and indoor environmental quality, among other high-performance green building issues.

"It is important to that we develop a strong green building standard that has the most impact in improving sustainability affecting a wide variety of building sectors," said ASHRAE President Bill Harrison. "We are confident that the new standard will reduce a building's impact on the environment."

"In a move that is critical in today's economy, Standard 189 will bring green building practices to the mainstream," said Brendan Owens, Vice President of LEED Technical Development, U.S. Green Building Council. "The key to a prosperous future is sustainability, and the triple bottom line - environmental responsibility, economic prosperity and social equity - is imperative as we move forward."

"The expertise demonstrated in the make-up of the newly constituted committee will provide the necessary content knowledge to insure the development of a valuable standard," says Rita Harold, director of technology for IESNA.

The proposed standard has generated substantial public interest, with more than 900 comments received during each of two previous public reviews. It is anticipated that the standard will undergo a new full public review in the near future as technical guidance and input is offered by new committee members.

ASHRAE 2008 BACnet Published

ATLANTA – Guidance to reduce a building's energy consumption on demand is contained in ASHRAE's newly published BACnet standard.

ANSI/ASHRAE Standard 135-2008, BACnet® -- A Data Communication Protocol for Building Automation and Control Networks, allows building equipment and systems manufactured by different companies to work together. It is the only open, consensus-developed standard in the building controls industry. The new standard contains seven addenda approved since the 2004 standard was published.

"The 2008 version of the standard incorporates many years of work by the BACnet committee," said immediate past chair Bill Swan. "This includes material first published a couple of months ago. It replaces the 2004 version as the standard for BACnet technical and specification efforts."

The standard contains new guidance related to the Load Control object, an extension to reduce a building's energy consumption on demand - a key element of the integration of energy utilities and buildings to reduce or eliminate brownouts and blackouts from energy grid overload.

It also covers:

- the Access Door object, the first of the extensions to fully support physical access control
- improvements in requirements on BACnet devices
- new capabilities such as BACnet Web Services which, among other things, are being considered for energy utility-building communications
- a standardized and interoperable means to record alarms

The cost of ANSI/ASHRAE Standard 135-2008, BACnet® -- A Data Communication Protocol for Building Automation and Control Networks, is \$119 (\$99 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 at www.ashrae.org/bookstore.

ASHRAE Recognizes Outstanding HVAC&R Industry Achievements

CHICAGO - The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recognized 46 people for their contributions to ASHRAE and the HVAC&R industry at the Society's 2009 Winter Conference held here Jan. 24-28.

The ASHRAE Award for Distinguished Public Service recognizes distinguished public service by an ASHRAE member. The recipient is Kenneth M. Fulk, P.E., principal and chief mechanical engineer, Reed, Wells Benson and Co., Dallas, Texas.

Fellow ASHRAE is a membership grade that recognizes distinction in the arts and sciences of environmental technology. The honor is earned through achievement as a researcher, designer, educator or engineering executive. The Society elevated 22 members to the grade of Fellow ASHRAE:

Zahid Ayub, Ph.D., P.E., president, Isotherm, Arlington, Texas.

Pradeep K. Bansal, Ph.D., a professor of mechanical engineering, director of the Energy and Fuels Research Unit, and associate dean postgraduate, faculty of engineering, the University of Auckland, New Zealand

Stephen A. Becker, P.E., vice president, Mechanical Design Concepts, Fresno, Calif.

Steven T. Bushby, leader, Mechanical Systems and Controls Group, Building and Fire Research Laboratory, National Institute of Standards and Technology, Gaithersburg, Md.

Tin-Tai Chow, Ph.D., C.Eng., principal leader and director, Building Energy and Environmental Technology Research Unit, Division of Building Science and Technology, Faculty of Science and Engineering, City University of Hong Kong

Timothy Dwyer, C.Eng., a professor, Department of Engineering Systems, London South Bank University

Jay E. Field, Ph.D., senior chemist, Trane Residential Systems, Tyler, Texas

Leon R. Glicksman, Ph.D., professor of building technology and mechanical engineering, Massachusetts Institute of Technology (MIT), Cambridge, Mass.

Warren G. Hahn, P.E., CEO, Hahn Engineering, Tampa, Fla.

Sheila Hayter, P.E., senior engineer, National Renewable Energy Laboratory, Golden, Colo.

David F. Hughes, C.Eng., Beckenham, Kent, United Kingdom

Wichai Laksanakorn, P.E., chairman, W. and Associates Consultants, Bangkok, Thailand

Thomas J. McNamara, P.E., principal mechanical engineer, LM Consultants, Vernon Hills, Ill.

Gilbert Nye, P.E., president, Lawrence Nye Andersen Associates, Fresno, Calif.

Douglas T. Reindl, Ph.D., P.E., a professor, University of Wisconsin-Madison, and director of the Industrial Refrigeration Consortium, Madison, Wis.

Peter H. Rumsey, P.E., principal, Rumsey Engineers, Oakland, Calif.

Jitendra B. "J.B." Singh, president, J&P Engineers, Linwood, N.J.

Curtis R. Slayton, P.E., president and CEO, Consulting Services International, Louisville, Ky.

Arvind G. Surange, chief consultant and proprietor, ACR Project Consultants, Pune, India

Douglas Stuart Walkinshaw, Ph.D., P.Eng., president, Indoor Air Technologies, Ottawa, Canada

Thomas E. Watson, P.E., chief engineer, McQuay International, Staunton, Va.

Yuanhui Zhang, Ph.D., P.E., a professor and section leader, Department of Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign, Urbana, Ill.

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:

Kenneth Sonmor, Ecovision Consulting, Montreal, Quebec, Canada, in the existing commercial buildings category for his retrofit of a 13-floor office tower, 4200 St. Laurent Office Tower, Montreal

Laurier Nichols, P.E., Dessau, Montreal, Quebec, Canada, in the new public assembly category for Centre Communautaire de Mistissini, Mistissini, Quebec, Canada

Thomas H. Durkin, P.E., Durkin and Villalta Partners Engineering, Indianapolis, Indiana, in the existing institutional buildings category for HVAC renovations at George Washington Carver Elementary School, Indianapolis

Jacques De Grace, Pageau Morel and Associates, Montreal, Quebec Canada, in the new institutional buildings category for the Normand-Maurice Building, Montreal

Also in the Technology Awards, Eric Kirkland, Smithgroup, Phoenix, Ariz., receives second place in the new institutional buildings category for the National Renewable Energy Laboratory Science and Technology Facility, Golden, Colorado.

The ASHRAE Student Design Project Competition challenged teams of students to create architectural design as well as select and design HVAC&R systems for a 60,000-square-foot community recreation center. First place in the HVAC system selection category is awarded to Alyssa Adams, Calvin Douglass, James Gawthrop Jr., Justin Herzing, Amy Leventry, Michael Smith and Gregory Smithmyer of The Pennsylvania State University, University Park, Pennsylvania. First place in the HVAC system design category goes to Wiroj Ekwongmunkong, Chaowanaphan Lekkhom, Pakorn Nontiwatwanich, Patarapol Puangkum and Supayos Suveepattananont of Chulalongkorn University, Bangkok, Thailand. First place in the architectural design category is awarded to Alexandra Gibson, Justina Jones, Bryan Quarles and Bazigha Tufail of the University of Kansas, Lawrence, Kansas.

The E.K. Campbell Award honors outstanding achievements by engineering educators. The recipient is Judi Steciak, Ph.D., P.E. The award honors an individual for outstanding service and achievement in teaching and is presented by the ASHRAE Life Members Club. Steciak is associate professor of mechanical engineering, University of Idaho-Boise.

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 Prem Jain, Ph.D., Fellow ASHRAE, chairman and managing director, Spectral Services Consultants, New Delhi, India.

ASHRAE Technology Awards Highlight Outstanding Building Projects

CHICAGO – Designers of systems for a community center, a school, an office building and a governmental building are recognized by ASHRAE for incorporating elements of innovative building design.

Recipients of the ASHRAE Technology Awards were recognized at the Society's 2009 Winter Conference being held this week in Chicago. The recipients have applied ASHRAE standards for effective energy management and indoor air quality.

"ASHRAE Technology Awards are awarded for innovative HVAC&R designs that provide superior energy, economic, air quality and environmental performance through application of new technologies, new design concepts or by applying existing technologies in unusual ways," Bert Phillips, chair of the judging panel, said. "Innovation involves risk for owners and designers, requiring designers to work outside their comfort zone. Through the Technology Awards, ASHRAE recognizes innovation that works, honors the innovators and shares their design concepts with the broader HVAC&R community."

Following are summaries of the winning projects.

4200 St. Laurent Office Tower

Kenneth Sonmor, Ecovision Consulting, Montreal, Quebec, Canada, receives first place in the existing commercial buildings category for his retrofit of a 13-floor office tower, 4200 St. Laurent Office Tower, Montreal.

Sonmor made several energy-saving proposals related to energy measurement systems/direct digital controls, mechanical systems and electrical measures as part of a detailed energy audit. Among the most innovative measures was a heat recovery apparatus that preheats entering fresh air. The system is made up of two different heat recovery units – a patent-pending thermosiphon heat exchanger that uses an environmentally friendly refrigerant to transfer heat from the exhaust air into the fresh air supplied by the fresh air unit. The second unit transfers the heat of the warm water from the fan-coil condensers into the fresh air supplied by fresh air unit.

The natural gas savings are estimated at 62 percent, with electrical savings estimated at 16 percent of original electrical consumption and a reduction of 700 tons of CO₂. With estimated annual savings of around \$158,000, the project will pay itself back in a little over two years.

Centre Communautaire de Mistissini

Laurier Nichols, P.E., Dessau, Montreal, Quebec, Canada, receives first place in the new public assembly category for Centre Communautaire de Mistissini, Mistissini, Quebec, Canada.

The objective in building the community center was to design a building that would comply with sustainable development principles while providing high energy efficiency. The center houses an ice arena, which traditionally has high energy bills due to simultaneous heating and cooling load and high refrigeration needs. To reduce energy costs, Nichols selected an HVAC system comprised of heat pumps connected to a geothermal loop. Most arenas use chillers with standard condensers to produce and maintain the ice with extracted heat rejected through air condensers. In this project, rejected heat is reused as much as possible to meet the arena's heating load.

The building reports an energy reduction of 62 percent using geothermal energy, heat recovery and other energy efficient equipment and strategies. The cost savings are some \$154,000 a year. Through use of a life-cycle cost approach, greenhouse gas emissions were reduced by 350 tons a year compared to an equivalent community center built to minimum requirements.

HVAC Renovations – George Washington Carver Elementary School

Thomas H. Durkin, P.E., Durkin and Villalta Partners Engineering, Indianapolis, Indiana, receives first place in the existing institutional buildings category for HVAC renovations at George Washington Carver Elementary School, Indianapolis.

When the school was first built in 1935, an underground stream was inadvertently intercepted. The ground water was seen as a liability due to power outages that disabled sump pumps and flooded the boiler room. In 2005, the school

system added cooling to the building and the ground water became an asset, used as a geothermal heating-source and cooling sink. The ground water serves as condenser cooling water for a central chiller when air conditioning operates. When heat is needed, water flow through the same central chiller is switched with the ground water going to the evaporator and the building loop on the condenser side. The system uses technologies proven to be very effective – the heat recovery chiller and the geothermal heating and cooling.

The new system is cooling for less than half the cost of conventional equipment, with heating about one quarter of the cost of the cold system. Utility bills for 2007-08 with air conditioning were 16 percent less than utility bills for 2005-06 without air conditioning. When corrected for the cost of energy from 2005 to 2008, the savings are 33 percent.

Normand-Maurice Building

Jacques De Grace, Pageau Morel and Associates, Montreal, Quebec Canada, receives first place in the new institutional buildings category for the Normand-Maurice Building, Montreal.

In 2002, Public Works and Government Services Canada ordered construction of a federal multi-occupant building offering offices, classrooms, warehouses, and an indoor firing range for the Royal Canadian Mounted Police, the Canadian Navy and two federal departments. The intent was to create a green building prototype that would be at least 40 percent more efficient than building meeting the country's minimum energy code. To achieve these goals, the building features several innovative measures, including underfloor displacement ventilation for improved ventilation effectiveness, a cascade ventilation principle supplying outside air to occupied spaces before transferring to secondary spaces, radiant slabs for improved thermal comfort and energy efficiency, a geothermal heat exchanger to reduce energy consumption, and an innovative solid thermal energy storage system to reduce first costs of the geothermal heat exchanger.

The results show 40 percent more outside air supplied to occupied spaces as compared to ASHRAE Standard 62.1-2004; 51 percent regulated energy cost reduction compared to the 1997 national building code; 600 metric tons in avoided CO2 emissions each year, and 31 percent reduction in potable water use.

Eric Kirkland, P.E., Smithgroup, Phoenix, Ariz., receives second place in the new institutional buildings category for the **National Renewable Energy Laboratory Science and Technology Facility**, Golden, Colorado.

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Check-out the Updated Chapter Website at:

www.mississippivalleyashrae.org



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