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Major Study of Aircraft Cabin Air Quality Launched by ASHRAE

ATLANTA – Good afternoon and thank you for flying with us. We want to make sure you are as comfortable as possible during the flight, so please let us know – how's the air quality? Is the temperature ok? Do we need to adjust the lighting? Thanks again for flying Indoor Comfort Airlines.

This is the message millions of U.S. and international airline passengers could be hearing in the near future thanks to a study funded by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) and conducted by Battelle, a Columbus, Ohio-based global services and technology enterprise.

The research project will examine the link between aircraft cabin air and health symptoms and discomfort experienced by passengers and crew members.

“The aircraft cabin is a challenging microenvironment for maintaining the health, comfort and well-being of passengers and crew,” said Jeff Myers, principal investigator for Battelle. “Space is limited, conditions can feel cramped, the outside environment is extreme, and travelers may experience anxiety over loss of control over their situation and environment. Through this study, we will determine the causes of passenger and crew discomfort and use that information to make flights more comfortable.”

More than 600 million passengers fly U.S. carriers each year, with thousands of crew members spending much of their working time in densely packed airliner cabins.

During flights, passengers and crew can experience noise, reduced atmospheric pressure, poor lighting, vibration, low relative humidity, variable temperature and potential air quality degradation.

The study, set to begin early this year, will be carried out on several international and domestic commercial airlines. It also has the support of the Federal Aviation Administration's Air Transportation Center of Excellence for Airliner Cabin Environment Research.

Results from the research could be used by manufacturers to modify aircraft to improve air quality or by airline companies to make more low-impact changes, such as adjustment of lighting.

As part of the research, passengers on 160 flights will be surveyed about their perceptions of air quality on the flight. The flights will vary in distance, lengths and time zones.

Following the surveys, the top causes for statistical variation (such as the most complaints by time zone) will be ranked. Scientists then will travel on those flights, using on-board monitoring instruments to measure carbon monoxide and dioxide, respirable particles and volatile organic compounds among others.

The research is the second phase of a \$1.8 million research project. In the first phase in 2004, passengers and crew surveyed on four flights out of Cincinnati, Salt Lake City, Chicago and Seattle indicated that the overall cabin air quality was adequate.

ASHRAE, founded in 1894, is an international organization of 55,000 persons. ASHRAE, headquartered in Atlanta, 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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Indoor Environmental Design Focus of ASHRAE Satellite Broadcast

ATLANTA - Specific solutions to the everyday challenges of achieving indoor environmental quality within real-world budget constraints will be presented by ASHRAE in an upcoming satellite broadcast/Webcast.

Indoor Environmental Design: Practical Solutions to Everyday Problems, sponsored by ASHRAE's Chapter Technology Transfer Committee, will take place from 1-4 p.m. EDT, April 18.

"This program will benefit designers, building owners, architects, contractors and facility managers who are faced with the daily engineering challenge of specifying systems that maximize IAQ, thermal comfort and noise control," said Bill Williams, chair of the broadcast committee. "Viewers will be given guidance on how to provide ventilation air that helps protect buildings instead of increasing mold risk, how to avoid the three most common mistakes in ventilation system design and operation, and how to provide comprehensive filtration without breaking their budget."

Bill Coad, P.E., president of Coad Engineering Enterprises, St. Louis, Mo., and past ASHRAE president, will present an overview perspective on indoor environmental quality and introduce the following panel of experts:

- Hoy Bohanon Jr., P.E., owner and consultant, Bohanon Engineering Winston-Salem, N.C., "Ventilation System Design: Avoiding Three Common Mistakes."
- Lew Harriman, director of research, Mason-Grant, Portsmouth, N.H., "Ventilation Air: First, Do No Harm."
- Dan Int-Hout, chief engineer, Krueger-HVAC, Richardson, Texas, "Noise, IAQ and Thermal Comfort – Can You Have It All?"
- Chris Muller, technical director, Purafil, Doraville, Ga., "Behind the Access Door – Advances in Affordable Filtration for IAQ."

Online registration opens March 1 for satellite broadcast site coordinators and Webcast participants at www.ashrae.org/IEDbroadcast. Registration for satellite downlink viewers begins March 15. There is no fee for registration.

For more information, email ashrae-satellitebroadcast@ashrae.org or call 678-539-1139.

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ASHRAE Technology Awards Highlight Outstanding Building Projects

ATLANTA – A range of innovative technologies, including natural ventilation, use of grey water and incorporation of phase change materials, are highlighted in the winning ASHRAE Technology Award projects.

The awards recognize members' exceptional achievements that incorporate elements of innovative building design in the areas of occupant comfort, indoor air quality (IAQ) and energy conservation. Winners have applied ASHRAE standards for effective energy management and IAQ. The awards were presented at ASHRAE's 2007 Winter Meeting being held this week in Dallas.

Matt Younger, P.E., principal of Stantec Consulting, Seattle, Wash., received first place in the new health care facilities category for his design for the Washington Department of Veterans Affairs, Retsil, Wash.

The fully naturally ventilated building features large, independently operated windows that aid with a passive cooling system. The system's design is predicted to save 45 percent over Standard 90.1 requirements, even without taking into account the deletion of comfort cooling requirements because the building is naturally ventilated.

Younger used intensive thermal modeling as a critical design tool on this project. Through testing of different design parameters, a whole-building integrated design solution was developed.

Receiving first place in the new industrial facilities or processes category are Pierre Roussel, P.E., vice president of the mechanical division, and Jacques Lagace, P.E., vice president of innovation and major projects, at Bouthillette Parizeau & Associates for their design of the thermal plant at the Pierre-Elliot Trudeau Airport in Montreal, Quebec, Canada.

One of the challenges they faced was the proximity of the air traffic control tower and the possibility of the smoke plume from boiler combustion gases interfering with traffic control activities.

The team designed a system to avoid this scenario, incorporating measures such as running the boilers' flue gases through a direct contact economizer to cool them using grey water. This also allows the system to reclaim the heat and creates efficiency of up to 99 percent.

Daniel Pare, project manager for IBM in Bromont, Quebec, Canada, received first place in the existing industrial facilities or processes category for his design for an IBM semiconductor packaging facility in his hometown.

His use of a thermal energy system with phase change materials combined with free cooling, a variable frequency drive chiller and predictive algorithm control is a first in North America. Phase change materials are substances that can accumulate and release energy during phase change. In this case, a change from liquid to solid.

His design will produce energy savings of six percent annually in part by using artificial phase change materials in the chiller with different melting points between 28°F and 40°F. The system also uses a natural cooling exchanger, which runs from September to May to take advantage of Mother Nature's natural cooling season.

Honorable mention winners are as follows:

- Ronald Gagnon, president, Concept-R Inc., Sorel-Tracy, Quebec, Canada, new commercial buildings category, Comptoir Richelieu Botanix, Sorel-Tracy, Quebec, Canada.
- George Karidis, P.E., vice president and director of mechanical engineering, SmithGroup Inc., Detroit, new commercial buildings category, Visteon Village's corporate headquarters in Van Buren Township, Michigan.
- Ronald Henning, P.E., principal, SmithGroup Inc., Detroit, new institutional buildings category, University of Michigan's Life Sciences Institute, Ann Arbor, Michigan.
- Norman J. Brown, P.E., principal, CDi Engineers, Lynwood, Wash., public assembly category, Seattle Center Marion Oliver McCaw Hall Renovation, Seattle, Wash.

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ASHRAE Recognizes Outstanding HVAC&R Industry Achievements

DALLAS - The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) recognized 42 people for their contributions to ASHRAE and the HVAC&R industry at the Society's 2007 Winter Meeting held in Dallas Jan. 27-31.

The ASHRAE Hall of Fame honors deceased members of the Society who have made milestone contributions to the growth of HVAC&R technology. The Society inducts Mary Engle Pennington, Ph.D., whose pioneering work improved the safety of perishable foods, into the ASHRAE Hall of Fame. Pennington was the first female member of and a Fellow of The American Society of Refrigerating Engineers (ASRE), an ASHRAE predecessor Society. She was known for her outstanding contributions to the refrigerated preservation of foods in storage.

The ASHRAE/ALCO Medal for Distinguished Public Service recognizes distinguished public service by an ASHRAE member. The recipient is David McKenney, P.E., Life Member, chairman and executive officer, McKenney's Inc.: Mechanical Contractors and Engineers, Atlanta.

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 19 members to the grade of Fellow ASHRAE:

- William A. Acorn, P.E., principal of Acorn Consulting Services, Tucson, Ariz.
- Robert A. Bunn, P.E., Life Member, consulting engineer, Nashville, Tenn.
- Richard C. Cavestri, Ph.D., director and owner of Imagination Resources, Inc., Dublin, Ohio, a research firm.
- Florea Chiriac, Ph.D., professor of thermodynamics, refrigeration and air conditioning at the Technical University of Civil Engineering, Bucharest, Romania.
- Cynthia L. Gage, Ph.D., senior research engineer with the U.S. Environmental Protection Agency in Research Triangle Park, N.C.
- Eckhard A. Groll, Ph.D., professor and the director of global initiatives, cooperative education and professional experience in the Department of Mechanical Engineering at Purdue University.
- Jeff S. Haberl, Ph.D., P.E., professor in the Department of Architecture and the director of the Energy Systems Laboratory at Texas A&M University, College Station, Texas.
- Mark M. Hydeman, P.E., principal at Taylor Engineering, Alameda, Calif.
- Jiin-Yuh Jang, Ph.D., professor and chairman of the Department of Mechanical Engineering at National Cheng-Kung University, Tainan, Taiwan.
- K. S. Kannan, Ph.D., P.Eng., C.Eng., chief project coordinator at the Malaysia Energy Centre, Selangor, Malaysia.
- Yuguo Li, Ph.D., associate professor in the Department of Mechanical Engineering at the University of Hong Kong.
- Kent Peterson, P.E., founding principal and chief engineer of P2S Engineering, Long Beach, Calif.
- Laurentino Punsalan, P.E., Life Member, managing partner of L.R. Punsalan & Associates, Makati City, Philippines.
- K. Reinhard Radermacher, Ph.D., professor and a director/founder of the Center for Environmental Energy Engineering in the Department of Mechanical Engineering at the University of Maryland.
- Peter Simmonds, Ph.D., associate with IBE Consulting Engineers, Sherman Oaks, Calif.
- Sriram Somasundaram, Ph.D., staff scientist at Pacific Northwest National Laboratory in Richland, Wash.
- Shin-ichi Tanabe, Dr.Eng., professor in the Department of Architecture at Waseda University, Tokyo, Japan.
- Kuan-Hsiung Yang, Ph.D., professor in the Department of Mechanical and Electro-Mechanical Engineering, National Sun Yat-Sen University, Taiwan.
- Hiroshi Yososhino, Ph.D., professor in the Department of Architecture and Building Sciences at Tohoku University, Sendai, Japan.

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. Three projects received first-place ASHRAE Technology Awards:

- Matt Younger, P.E., principal of Stantec Consulting, Seattle, Wash., received first place in the new health care facilities category for his design for the Washington Department of Veterans Affairs, Retsil, Wash.
- Receiving first place in the new industrial facilities or processes category are Pierre Roussel, P.E., vice president of the mechanical division, and Jacques Lagace, P.E., vice president of innovation and major projects, at Bouthillette Parizeau & Associates for their design of the thermal plant at the Pierre-Elliot Trudeau Airport in Montreal, Quebec, Canada.
- Daniel Pare, project manager for IBM in Bromont, Quebec, Canada, received first place in the existing industrial facilities or processes category for his design for an IBM semiconductor packaging facility in his hometown.

Projects receiving ASHRAE Technology Awards honorable mentions are:

- Ronald Gagnon, president, Concept-R Inc., Sorel-Tracy, Quebec, Canada, new commercial buildings category, Comptoir Richelieu Botanix, Sorel-Tracy, Quebec, Canada.
- George Karidis, P.E., vice president and director of mechanical engineering, SmithGroup Inc., Detroit, new commercial buildings category, Visteon Village's corporate headquarters in Van Buren Township, Michigan.
- Ronald Henning, P.E., principal, SmithGroup Inc., Detroit, new institutional buildings category, University of Michigan's Life Sciences Institute, Ann Arbor, Michigan.
- Norman J. Brown, P.E., principal, CDi Engineers, Lynwood, Wash., public assembly category, Seattle Center Marion Oliver McCaw Hall Renovation, Seattle, Wash.

The ASHRAE Student Design Project Competition challenged teams of undergraduate students to focus on the mixed-use renovation of the Dallas Power & Light building in a historic area of Dallas. First place winners in the HVAC system selection and HVAC system design categories are awarded to the same team from The Pennsylvania State University: Justin Bern, Kevin Kaufman, David Melfi, Jon Gridley, Jessica Lucas and Yulien Wong. Their faculty advisor is William P. Bahnfleth, Ph.D, P.E. First place in the architectural design category was awarded to Alissa Ogen and Sonia Carias of Savannah College of Art and Design. Their faculty advisor is Emad M. Afifi, Ph.D.

The E.K. Campbell Award honors outstanding achievements by engineering educators. The recipient is Ronald H. Howell, Ph.D., P.E., Fellow ASHRAE, Life Member, who serves as an adjunct lecturer at Boise State University in Boise, Idaho.

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 recipients are Constantinos Balaras, Ph.D., P.E., is research director, Institute for Environmental Research and Sustainable Development, National Observatory of Athens, Greece, and Ross Montgomery, P.E., president, QST Honeywell Controls, Palmetto, Fla.

ASHRAE, founded in 1894, is an international organization of 55,000 persons. Its sole objective is to advance through research, standards writing, publishing and continuing education the arts and sciences of heating, ventilation, air conditioning and refrigeration to serve the evolving needs of the public.

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ASHRAE, REHVA Partner to Encourage Sustainability

ATLANTA - ASHRAE and the Federation of European Heating and Air-Conditioning Associations (REHVA) have formalized a longtime relationship through signing of a new memorandum of understanding. The memorandum, signed today at ASHRAE's 2007 Winter Meeting, calls for increased cooperation between the two associations.

"The challenges of the insecure energy situation and the public's request for better and more secure buildings are huge," Olli Seppänen, president of REHVA, said. "ASHRAE and REHVA must work together to find the best sustainable technology for superior indoor environment for buildings. Coordination and cooperation is needed so that duplication of efforts is avoided and that the limited resources are used most efficiently."

Europe is committed to a strong energy policy, Seppänen noted. The goal for energy saving is set at 20 percent by the year 2020 in Europe. Steps toward this goal include an energy efficiency and energy services directive from April 2006 that sets the goal for energy savings in the member states at 1 percent per year during the next nine years, and requests national energy efficiency plans in June 2007. The European commission also prepares a directive for minimum energy performance standards for 14 priority energy products in 2007.

ASHRAE is pursuing a similar goal, with hopes of achieving net-zero energy use by the year 2020.

"This agreement strengthens the long-time relationship between ASHRAE and REHVA," Terry Townsend, president of ASHRAE, said. "We must continue to work together to gain technical knowledge and to share it. The engineers who belong to ASHRAE and REHVA are searching for new technology and guidance to develop safe, comfortable, healthy energy-efficient buildings. This agreement encourages our organizations to work together to ensure more sustainable environments all around the world."

REHVA represents 30 national engineering associations in Europe representing more than 100,000 experts in the area of heating, air-conditioning, ventilation and refrigeration. It is based in Brussels, Belgium.

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