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Adventure is a State of Mind: Record Balloonist Speaks at ASHRAE '07

ATLANTA - Bertrand Piccard's nonstop circumnavigation of the Earth in his Breitling Orbiter balloon in 1999 set a milestone in aviation.

As the keynote speaker at ASHRAE's 2007 Annual Meeting, he will share his experiences and how his vision plays a role in the future of engineering. Piccard will speak at the Plenary Session, held Saturday, June 23. Registration is not required to attend.

Also, during the plenary session, Terry Townsend, ASHRAE president, will give an update on the Society, and honors and awards related to Society service will be presented to more than 50 ASHRAE members.

For more information on the meeting, June 23-27, Long Beach, visit www.ashrae.org/longbeach.

In his lecture, Adventure is a State of Mind: the Metaphor of the First Around-the-World Balloon Flight, Bertrand Piccard explains how flying in a balloon symbolizes a new relationship between humans, technology and nature.

In this metaphor of life, the balloon is prisoner of the air currents, just as man is prisoner of his convictions, problems or fate. But in the same way as a balloon changes altitude to find the currents that will drive it in a new direction, man can rise professionally, psychologically, philosophically or even spiritually, to become responsible for the direction of his life.

"When we imagine a balloon trip around the world, the first thing that comes to mind is the technical challenges that must be faced -- the equipment, the preparation, the science of predicting weather," Piccard said. "But as it turns out technology and science tell only part of the story of transversing the world in a balloon. The story is really one of adjusting, adapting, using what you know and combining that with what you believe, what your instincts tell you, instincts that have been honed by training and experience. Albert Einstein once said, 'the people who are best at Plan B are the most successful.' Finding Plan B is the story of circling the world in a balloon."

"While ASHRAE members' technical tools and skills are indispensable, they will learn that the spirit in which they use them is what is most important," Terry Townsend, ASHRAE president, said. "As in life, there is no cookbook to find the perfect HVAC&R design or to design the perfect product. In life, you need to adapt, looking to the future and believing in your skills and your preparation. This lesson holds true no matter what your profession but especially for those in the fields of science and technology. Passion and insight coupled with engineering skill is what is required to meet the challenges facing the world today."

Piccard was born in Lausanne, Switzerland, into a family of explorers and scientists. His grandfather was the first person to explore the stratosphere and he invented the bathyscaphe with which his father dived to the deepest point in the oceans.

He studied medicine, became a senior consultant in a psychiatric hospital, and specialized jointly in psychiatry and psychotherapy for adults and children. An expert in hypnotherapy, he is a lecturer and supervisor for the Swiss Medical Hypnosis Society.

Always interested in the study of human behavior in extreme situations, he was one of the pioneers of hang gliding and microlight flying in the 1970s and became European champion in hang-glider aerobatics (1985).

After qualifying as a balloon pilot, he won, with Wim Verstraeten, the first transatlantic balloon race (Chrysler Challenge, 1992) and then initiated the "Breitling Orbiter" project. Captain of the three attempts, he succeeded with the Englishman, Brian Jones, the first non-stop round-the-world balloon flight, achieving the longest flight in terms of both duration and distance in the history of aviation : 45,755 kilometers in 19 days, 21 hours and 47 minutes (capturing a total of seven world records).

Together with Jones and their sponsor, Breitling, he created the Winds of Hope humanitarian foundation to use the financial and media impact of the round-the-world flight to fight forgotten and neglected sufferings on Earth. The first action, implemented in conjunction with the WHO, concerns the fight against Noma, a little known illness which hideously disfigures the faces of thousands of children in very poor countries.

He is author of *Around the World in 20 Days (USA)* or *The Greatest Adventure (UK)*.

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.

Editors Note: Photographs of Piccard are available upon request.

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20 Projects Funded
Clear Ice Maker Developed Through ASHRAE Grant

ATLANTA – Improved refrigeration technology and beautification come together in a teaching project being funded by ASHRAE.

Through a grant from ASHRAE, students at Pennsylvania College of Technology will design and build a large-scale, clear ice maker for their refrigeration lab. The device also will be used by students in the School of Hospitality for decorative ice carvings.

Twenty grants, totaling some \$118,000, have been awarded by ASHRAE to colleges and universities worldwide to promote the study and teaching of HVAC&R, encouraging undergraduate students to pursue related careers. The grants are used to design and construct projects.

Currently, students in the college's hospitality school use small clear ice blocks that include an unattractive seam where they are connected. The HVAC construction and design technologies students will build a device that produces a large volume, monolithic clear ice structure suitable for carving, which is more attractive than the seamed ice.

To do so, they will use mechanical refrigeration with an intermediate cooling fluid routed through a custom enclosure. The design also includes a reverse osmosis unit for water purification and a custom water distribution system to introduce the treated water into the enclosure. Heating strips will be incorporated to facilitate removal of the clear ice, while PLC controls are used to automate the water flow and freezing rates.

"The device will improve upon the state-of-the-art refrigeration systems used in developing optically clear ice," Thomas Ask, faculty advisor, said. "The final product also will be beneficially used and appreciated by those in our school of hospitality."

Other ASHRAE grant recipients are:

- Alfred (New York) State College, Multi-Zone Natural Gas Fired Radiant Heating System
- American University of Beirut, Experimental Study of a Combined Solar Desalination and Air-Conditioning Unit
- De La Salle University, Manila, Design, Fabrication and Testing of Cold Thermal Storage System with Provisions for Occupancy Sensor
- De La Salle University, Manila, Development of an Energy Efficient Indoor Air Treatment Intelligent System
- East Carolina University, Design and Construction of a Laboratory Unit for Testing the Characteristics of Axial Flow Fans
- Grove (Pennsylvania) City College, Refrigeration Laboratory Experiment and Instruction Aid
- Jimei University, Fujian, China, Design and Construction of an Experimental Facility for Variable Air Volume Systems
- Lamar University, Beaumont, Texas, Solar Water Heating System Demonstrator
- Louisiana Tech University, Design and Construction of Thermal Components Test Stands

- Purdue University, Integration of Solar Heating with HVAC System
- Rochester Institute of Technology, Laminar/Turbulent Pipe Flow Lab
- The Catholic University of America, Washington, D.C., Two-Phase Thermal Loop for Undergraduate Thermal Sciences Laboratory
- Trinity University, San Antonio, Texas, Design and Construction of a Secondary Loop System to Measure Heat Transfer and Fluid Flow of Microencapsulated Phase Change Material Slurry in a Heat Exchanger
- Universidad Pontificia Bolivariana, Columbia, South America, Design and Construction of an Energy Storage Module for the HVAC Lab
- University of Cincinnati, Design, Build, Test and Modeling of Novel Radiant Wall Panels for Office/Solar Home Heating and Cooling Using Thermoelectrics Powered by Solar PV Array
- University of Coimbra, Portugal, Building of a Small-Scale Plant for Demonstration of Solar Adsorption Refrigeration Cycle
- University of Kansas, Fan and System Effects Experimental Apparatus
- University of Oregon, Thermal Circuiting
- University of Windsor (Ontario), Air Diffusion in a Model Room

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ASHRAE Seeks Members for Contractor, Design Build Firm Task Group

ATLANTA – Making ASHRAE’s products and services more user friendly for HVAC&R contractors and design build firms is the goal of a new ASHRAE task group.

“Our goal is to provide new and timely educational materials that will fit the need of HVAC&R contractors and design build firms, and to make ASHRAE’s existing technical information more user friendly for them,” Jim Fields, chair of the group, said. “A more active involvement of these disciplines within ASHRAE at the technical level would lead to a better balanced ASHRAE and help to strengthen the level of understanding between design engineers and these other disciplines.”

He noted that given ASHRAE’s focus on sustainability, reaching out to contractors and design build firms was a natural step.

“We must work together to ensure sustainability,” he said. “Successful green buildings are the result of a team effort – owners, designers, contractors and facility managers that work together to produce and maintain facilities that are energy efficient, have healthy environments, provide comfort and safety to occupants while minimizing the impact on natural resources.”

Those interested in joining TG3.HVAC Contractors and Design Build Firms can email morts@ashrae.net for more information.

ASHRAE has some 100 technical committees, task groups and technical resource groups. These committees drive the ASHRAE research program, support the development of standards, develop and sponsor sessions for the technical program held ASHRAE meetings, review and draft technical articles, special publications and educational courses, and write the ASHRAE Handbook, considered to be the Bible of the HVAC&R industry.

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Sustainable Buildings Highlighted in ASHRAE Online Seminar

ATLANTA – Four online professional development seminars are being offered this spring by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) through its ASHRAE Learning Institute (ALI).

ALI seminars provide professional development through in-depth information that is timely, practical and advanced beyond a fundamental level. Seminar participants will earn three professional development hours, .3 continuing education units, or three American Institute of Architects learning units for each seminar completed.

The seminars are:

- Introduction to Green Buildings and Sustainable Construction, March 28, 1-4 p.m. EDT
- Complying with ANSI/ASHRAE/IESNA Standard 90.1-2004 HVAC/Mechanical, April 25, 1-4 p.m. EDT; and repeated May 2, 1-4 p.m.
- Complying with Requirements of ANSI/ASHRAE/IESNA Standard 62.1-2004, March 21, 1-4 p.m. EDT; and repeated April 11, 1-4 p.m. EDT
- Understanding and Designing Dedicated Outdoor Air Systems (DOAS), April 18, 1-4 p.m. EDT

The cost of each seminar is \$225 (\$150, ASHRAE members). Site licenses are available to organizations that will be having five or more seminar participants. For more information, e-mail edu@ashrae.org or call 678-539-1146

To register, visit www.ashrae.org/onlinecourses.

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Engineers Without Borders Founder to Speak at ASHRAE '07

ATLANTA – With an estimated population increase of 2 billion people in the next two decades, unprecedented demand will exist for energy, food, water, land, transportation, waste disposal, health care and infrastructure.

The role of engineers will be critical in fulfilling those demands from remote small communities to large urban areas.

“As we enter the first half of the 21st century, the engineering profession must embrace a new mission statement – to contribute to the building of a more sustainable, stable and equitable world,” says Bernard Amadei, Ph.D.

Amadei is the founding president of Engineers Without Borders - USA and the co-founder of the Engineers Without Borders-International network.

He will serve as keynote speaker, kicking off the technical program at ASHRAE's 2007 Annual Meeting, June 23-27. His presentation takes place at 9:30 a.m. Sunday, June 24. A meeting badge is required to attend. For more information, visit www.ashrae.org/longbeach.

The mission of EWB-USA is to partner with disadvantaged communities to improve their quality of life through implementation of sustainable engineering projects, while involving and training internationally responsible engineering professionals and students.

Amadei says a new generation of engineers must be trained who can better meet the challenges of the developing world and address the needs of the most destitute people on the planet. Today, an estimated 20 percent of the world's population lacks clean water, 40 percent lacks adequate sanitation and 20 percent lacks adequate housing.

His presentation will focus on the challenges and opportunities with practicing engineering as well as the education of engineering. He also will discuss the importance of integrating engineering with non-engineering disciplines when addressing the needs of developing communities.

"I'm excited about the challenges and opportunities given to ASHRAE," Terry Townsend, ASHRAE president, said. "Our technology and expertise is without borders."

Amadei is a professor of civil engineering at the University of Colorado at Boulder. His current interests cover the topics of sustainability and international development. At the university, he is leading a new paradigm shift in engineering education and practice called earth systems engineering (ESE). It emphasizes the interaction between the built environment and natural systems.

As part of the ESE initiative, Amadei directs a new program in engineering for developing communities, with a mission to educate globally responsible engineering students and professionals who can offer sustainable and appropriate solutions to the endemic problems faced by developing communities worldwide.

One of Amadei's goals is to promote sustainable development, appropriate technology, service learning, and system thinking in the curriculum and research of civil engineering programs at CU Boulder and other U.S. universities.

He is working on a new book, *Engineering with Soul*.

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Editors Note: A photograph of Amadei is available upon request, along with a first-hand account of an ASHRAE member who is a volunteer with Engineers Without Borders.

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ASHRAE Announces Healthcare Design Professional as First Certification

ATLANTA – A program to certify healthcare facility design professionals is being launched by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). The first examination to earn the credential will be held on June 28 in Long Beach, Calif., immediately following ASHRAE's Annual Meeting there. Subsequent examinations will be Web-based at testing facilities nationwide.

ASHRAE's Healthcare Facility Design Professional (HFDP) certification will designate understanding of a body of knowledge identified by ASHRAE as being critical to successful facility design.

"An ASHRAE certification will let employers know that the certification earner has mastered a significant body of knowledge in a specific aspect of HVAC&R design, as determined by industry professionals in that field and has met specified eligibility requirements," says ASHRAE President Terry Townsend. "Firms who employ ASHRAE-certified engineers will be better able to promote their services. This is an invaluable benefit to ASHRAE members to help them stand out from the competition."

The technical content for the healthcare facility design certification exam was developed in conjunction with the American Society for Healthcare Engineering (ASHE) of the American Hospital Association (AHA). ASHRAE will work with other industry organizations to develop additional certification programs, including sustainability, commissioning, and building operations and management.

Persons interested in earning the certification must meet certain eligibility requirements and submit a completed application. Membership in ASHRAE is not required to participate.

The first offering on June 28 consists of a two-hour, multiple choice, 100-question written exam. Participants will receive their scores within six weeks. Each exam program will have its own recertification or renewal requirements, potentially including such professional development activities as attending meetings or taking courses sponsored by ASHRAE and other organizations.

Optional resources, such as online sample exam questions, are available to help candidates prepare for the exam. Other resources include the ASHRAE publication HVAC Design for Hospitals and Clinics and two short courses will be offered at the 2007 ASHRAE annual meeting: Healthcare Facilities Best Practice HVAC Design Considerations and Criteria and Healthcare Facilities Best Practice Applications of HVAC Systems.

The exam cost is \$275 for ASHRAE members and \$395 for non-members. For more information, visit www.ashrae.org/certification or e-mail certification@ashrae.org.

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5 Addenda Open for Review
Outdoor Air Cleaning Proposed as Requirement for ASHRAE 62.1

ATLANTA – Indoor air quality in some areas of the United States would improve under a proposed change to ASHRAE's ventilation standard.

ANSI/ASHRAE Standard 62.1, Ventilation for Acceptable Indoor Air Quality, sets minimum ventilation rates and other requirements for commercial and institutional buildings. Five proposed addenda to the standard are open for public review until April 30.

Proposed addendum 62.1c would add air cleaning requirements to section 6 of the standard. If approved, systems in non-attainment areas for particulate matter with diameter 2.5 microns (PM2.5) would need to use intake air filters with minimum efficiency reporting value (MERV) 11.

The use of better filtration would improve indoor air quality, according to Dennis Stanke, chair of the Standard 62.1 committee.

In addition, systems in areas designated by the U.S. Environmental Protection Agency as "serious," "severe," or "extreme" non-attainment areas for ozone would require ozone air cleaners with at least 40 percent efficiency.

"The standard has required 40 percent efficient ozone air cleaning for some of these high-ozone areas since 2004, but designers have had difficulty determining when this requirement applies," Stanke said. "If more designers understood which geographical areas require ozone air cleaning and used 40 percent ozone air cleaners in those areas, indoor air quality would be improved for many people."

Also open for public comment is addendum 62.i, which would change minimum outdoor airflow requirements for zones with environmental tobacco smoke (ETS) as described in section 6.2.9.

"This issue attracted significant interest during its first public review period, resulting in many comments," Stanke said.

Based on public input, the current addendum was revised and now requires that ETS be supplied with more outdoor air than areas with the same occupancy category but without ETS (i.e. ETS-free areas). The outdoor airflow rate would be determined using "engineered methods with the approval of the authority having jurisdiction."

"Some committee members feel that including a requirement for increased outdoor air flow would imply that dilution ventilation can be used to achieve acceptable IAQ in the presence of ETS, and that the 'engineered methods' requirement places an undue burden on local authorities," Stanke said. "The majority, however, feels that removing all reference to outdoor airflow in ETS would mean that any outdoor airflow rate – even a rate below that required for ETS-free areas – would comply with the standard, and that local code authorities must always approve engineered solutions. We'll see what the public thinks based on this second public review."

Proposed addenda to ASHRAE standards are available during public review periods. To read the addenda or to comment, visit www.ashrae.org/publicreviews.

Other 62.1 addenda open for review are:

- Addendum 62.1a - addresses compliance issues that may result from unclear wording or phrasing in section 5.
- Addendum 62.1b - clarifies informative language in Appendix C, D and F.
- Addendum 62.1d - adds the following occupancy categories to Table 6-1: kitchens, banks and bank lobbies, breakrooms, sorting, packing, light assembly, general manufacturing and storage rooms (dry).

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Addenda to Standard 90.1 open for public review Proposed 90.1 Addendum Would Allow More Efficient Skylighting

ATLANTA – A proposed addendum to ASHRAE’s energy standard will allow for increased energy savings by modifying envelope requirements to allow the use of more daylight-friendly skylight materials in certain climate zones and require photocontrols with certain skylights.

Proposed Addendum d to ANSI/ASHRAE/IESNA Standard 90.1-2007, Energy Standard for Buildings Except Low-Rise Residential Buildings, is open for public review. Five proposed addenda are open for review until April 15 for addenda a, b and c, and until April 30 for addenda d and e.

The current wording of the standard limits the use of high solar heat gain coefficient (SHGC) plastic skylights that transmit high levels of light in climate zones 1 through 3. This restricts one of the potentially most energy efficient ways to use skylighting, according to Eric Richman, chair of the 90.1 lighting subcommittee.

The proposed addendum would provide an exemption to the SHGC requirements when high-diffusion skylights are used in conjunction with a multi-level photocontrol system. Photocontrol systems regulate lighting and save energy by reducing the artificial lighting in buildings when natural lighting reaches a useful level.

“One result of this change will be to allow for more flexibility in designing skylight systems for energy savings and facility enhancement,” says Richman. “The requirement for lighting controls when daylight is available will create electricity energy savings while reducing inner cooling loads.”

Proposed addenda to ASHRAE standards are available during public review periods. To read the addenda or to comment, visit www.ashrae.org/publicreviews.

Other proposed addenda to ANSI/ASHRAE/IESNA Standard 90.1-2007 include:

- Addendum a, which will clarify that the current cooling tower requirements in the standard apply to open circuit cooling towers only, as the standard is now written.
- Addendum b, which now references Standard 62.1-2004 for minimum ventilation requirements rather than a specific section of the standard. This addendum also provides an exception that allows a regulating body to require more stringent ventilation rates for specific types of facilities when the safety of the occupants is a major design factor that is more important than complying with the fan power limitation requirements.
- Addendum c, which would add vivarium to the list of spaces that require specific humidity levels to satisfy process needs in section 6.5.2.3
- Addenda e, which would modify energy recovery requirements by expanding them to cover the use of energy recovery by weather zone and for outside air percentages equal to or greater than 30 percent.

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