Watson gives his presidential address at the Annual Conference in San Antonio. The backdrop shows the Alamo.

2012–13 Presidential Address

Broadening ASHRAE's Horizons

By Thomas E. Watson, P.E., Fellow/Life Member ASHRAE

Thomas E. Watson, P.E., became the 2012–13 ASHRAE president during the annual President's Luncheon on Monday, June 25. What follows is an edited transcript of his presidential address.

The theme I have chosen for this Society year is Broadening ASHRAE's Horizons. What does that really mean? It means providing solutions for issues that affect people—people in the communities in which ASHRAE members live and work.

You, the ASHRAE member, are a problem solver. You've been a problem solver since you started in the industry. Now we need to apply these problem-solving skills to a wider group of people in order to serve communities throughout the world. The emphasis this year is about giving you more opportunities and more ways to fulfill our mission by the application of technology to better serve humanity and promote a sustainable world.

ASHRAE is a very diverse society with more than 53,500 members in 132 countries. We are a global society, and we need to serve the members throughout the world, not just those in North America.

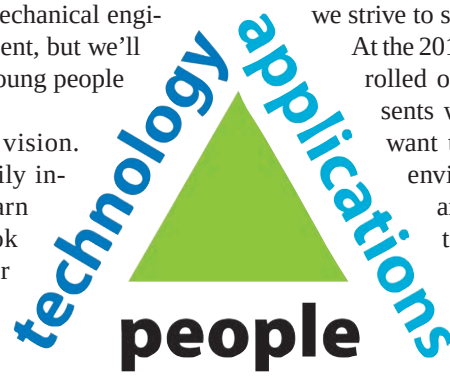
My Personal Journey

Broadening ASHRAE's Horizons is based on my experiences with ASHRAE volunteers. Leaders of ASHRAE exist at

every level: The chapter level; regional level; and at the Society level on technical committees, standards committees, and policy committees. My role is to support you, the volunteers of ASHRAE. As I have been involved over the years in various ASHRAE capacities, I have looked at what our volunteers have accomplished. I have learned from everything you have done. This year's theme is really about that interaction. I am grateful to have had the opportunity to learn so much from so many of you.

I grew up in a very small community, one in which I still live. Like many small towns the railroad and train station was central to its development. My father started taking me to watch steam engines at the age of two. I was fascinated by machinery. By the age of six, I knew I wanted to be a mechanical engineer. That's not usual in today's environment, but we'll come back later and discuss how to get young people involved in engineering.

I started with an extremely narrow vision. When I joined ASHRAE, I was primarily involved with technical committees to learn the technology. The ASHRAE Handbook was a valuable resource to learn about our industry. I really wasn't focused on a greater good. For me, it was all about education. But through working with you, my fellow members, ASHRAE has given me the opportunity to increase my technical knowledge, meet the best and brightest people in our industry, and solve problems with people from all parts of the globe. It's been a great experience.



Our Heritage

"*We have problems relating to air pollution, water pollution, thermal pollution, and noise pollution among other things, but air, water, heat, and noise are just the things ASHRAE members cut their teeth on. We cannot simply sit on the sidelines. We have so much talent that it is our responsibility, indeed our duty as professionals, to lend our aid.*" This was said by ASHRAE President Stan Gilman in 1972, the year I joined ASHRAE.

It reminds me that ASHRAE has been involved with sustainability, real sustainability from a technical basis, for many decades. The sustainability we are working on today is ASHRAE's heritage. It is nothing new. It is not a fad. It is here to stay. It is important and it has been an on-going process for well over 40 years.

Technology

So what do I mean by Broadening ASHRAE's Horizons? It is about ASHRAE members taking simple and easy to use technology and applying it throughout the globe. You cannot separate the technology and the applications of technology from the people of ASHRAE and their communities. So many members serving on technical committees and on standards committees have developed the technology of our industry through the years. Now we must broaden its application as we strive to serve additional communities.

At the 2012 Winter Conference in Chicago, ASHRAE rolled out a new ASHRAE logo. The logo represents who we were, who we are, and where we want to be. ASHRAE shapes tomorrow's built environment today—not just HVAC&R. We are involved in the sum of built environment technologies. We need to reach out and collaborate beyond our traditional boundaries. We need to expand how we think about ourselves.

Our technology needs to consider many issues: climate, culture, how people think about air conditioning, how they use it, and the economic environment. In my hometown, and in every one of your communities, there are economic issues. We need to consider our resources, the technical education of the people, and the infrastructure available to us. These are the challenges we face in balancing our technology. In many cases, we have not yet achieved the balance needed to meet the needs of all the communities that ASHRAE serves.

When it comes to technology, we need to keep the users in mind. We need to keep it simple. Do we really need those latest technologies in all cases? Do we need super-sophisticated solutions? Do we need complicated buildings? We need to focus on impact, making sure the advanced technology is used throughout the life of the building, not just installed as showpiece to win an award, then not used. We need to have buildings that remain viable for years to come. We need to use innovation that works. An important issue for our industry is providing simple,

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About the President · Thomas E. Watson, P.E., is a chief engineer, Daikin McQuay, Staunton, Virgina. His presidential theme is Broadening ASHRAE's Horizons. His past service includes chair, Members Council and Technology Council, President-Elect Advisory Committee, the Strategies for a Global Environment Ad Hoc Committee and the Advocacy Committee; and vice chair of the Vision 2020 Ad Hoc Committee. He also served as a member of the Advanced Energy Design Guide Steering Committee.

Watson became involved in ASHRAE in 1972 and became a member of Technical Committee 8.2, Centrifugal Machines, soon thereafter. He served as member of the Standard 34, *Designation and Safety Classification of Refrigerants,* committee in the early 1990s and also served as chair of the Standard 15 committee, Safety Standard for Refrigeration Systems. Most recently, he served as chair of the committee that oversaw the Society's rebranding, rolled out in January 2012.

Watson is a recipient of the Standards Achievement Award and Exceptional Service Award. He received a Bachelor of Science in mechanical engineering from Virginia Tech in 1966 and a Master of Science in mechanical engineering from West Virginia University in 1969.

affordable solutions. We need to use global expertise to meet local needs.

> When it comes to technology, we need to keep the users in mind. We need to keep it simple. Do we really need those latest technologies in all cases? Do we need complicated buildings?

Applications

Our control systems are too complicated. I remember 30 years ago when I became involved with a wonderful project. I was so proud of it—a triple cascade system that took water from 45°F to 200°F. It had three different machines with different refrigerants. Wonderful, but the controls were so complicated that only two people in the world—I happened to be one of them—could start the machines. It was great technology, but it was too difficult to operate, and I had a lot of air miles before it was over. Those are exactly the types of solutions that we do not need.

Kirk Mescher, an incoming ASHRAE director-at-large, tells me there are geothermal units over-pumping with too much water flow. Why is that? Because the controls are too complicated and the operators don't understand the impact of the settings they use. We have variable frequency drives (VFDs) that people have installed that are running at a constant speed on compressors and fans. Why wouldn't you have them control the speed to match the demand? It's that simple. If you're going to install a VFD, make sure you design the system to match the demand and train the operators to maintain the design. It seems fundamental, but it does not happen often enough.

We have complicated thermostats. How many of you need to program thermostats for relatives or friends? It is important that we develop interfaces for controls that can be used by a typical

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user. We all understand that we have to advance the technology to improve the built environment. However, the operation and maintenance of these advanced systems must be simple and easy to use to be successful.

ASHRAE members need to give guidance for other applications, including historic buildings. That is a pet project of mine. There are many historic buildings in my community; how do we save them? I have asked Technology Council to help. We have met with AICARR (Italian Association of Air-Conditioning, Heating and Refrigeration), one of our valued Associate Society Alliance members. We are considering a conference in Italy to provide technical guidance for historic buildings. We just can't give up on using historic buildings. They are too valuable, and leave too large an environmental footprint, to be neglected or abandoned.

We need to look at collaborating with lenders on energy-efficiency retrofits. How can ASHRAE provide credibility so financial institutions will know that when they lend money, there is a good probability they are going to get it back, and the energy retrofits will actually pay back in a reasonable amount of time?

We should be talking about "net present value" or the value going forward. How do we get that money in the hands of the people who need it? It is a serious issue right now throughout the world.

We need to explore cold climate applications, such as those being discussed at a cold climate conference coming up in Calgary, Canada, in November. We are co-sponsoring the conference with REHVA (Federation of European Heating and Air Conditioning Associations) and SCANVAC (Scandinavian Federation of Heating, Ventilation and Sanitary Engineering Associations). We are also looking at a tropical climate conference in Shanghai with the Chinese Association of Refrigeration.

As I grew in ASHRAE, one of my focus areas was refrigerants. Maybe 400 or 500 people can relate to what I do. Earlier in the year, I thought "how do I make a theme out of that?" I didn't even try. However, I have to be true to my past, so we're working to reduce our impact on the environment. This means that we need to consider the use of flammable refrigerants, including hydrofluorocarbons such as HFOs. Also, we have to look at the management of refrigerants to ensure we have good stewardship of refrigerants.

In the fall of this year in Gaithersburg, Maryland, we are having a conference with NIST (National Institute of

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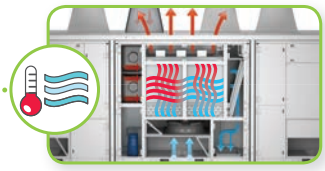

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Standards and Technology) that is focused on moving toward sustainability. The idea is to provide an opportunity for people from all facets of refrigerant technology, natural refrigerants, ammonia, CO_2 and hydrofluorocarbons to get together and have meaningful discussions for better refrigerant applications. We need to encourage more opportunities around the world for these serious technical discussions.

People

Ashok Virmani is the Director and Chair of ASHRAE's Region-at-Large, serving members stretching from Europe to India. He knows the importance and challenges of meeting local needs. Next January in Dallas at ASHRAE's Winter Conference, we are having a workshop for cost-effective, simple, and efficient systems for economically challenged communities. That could be in any number of U.S. cities and it could be anywhere in the world, including in your community.

Ashok tells us that ASHRAE's global initiative is bridging technologies across nations, languages and cultures: over 85% of global population and 58% of land mass. ASHRAE's rationalization of membership fees and its economical pricing of standards and publications for developing nations have resulted in exponential growth in its member base. ASHRAE's participation in international expositions and seminars across the developing world has led to wide dissemination of knowledge and promotion of regionally suited eco-friendly technologies.

A beginning has been made in making large numbers of certified professionals available in Asia by opening several examination centers. A vast pool of potential talent awaits, ready to be trained and absorbed. ASHRAE's Learning Institute must play a leading role in this movement.

ASHRAE's continuing involvement in developing economies will enable it to tap into vast unexplored opportunities for training and utilizing thousands of eager young minds.

Not only ASHRAE members but Associate Society Alliance members need to collaborate to extend our industry's impact beyond what it is today. We have to work with other societies throughout the globe to do this. We cannot do it all by ourselves. It is very important that we continue the collaboration that has been started.

We need to be more inclusive to accomplish our vision. Last year's ASHRAE President Ron Jarnagin challenged us to play a leadership role by bringing members and our industry together. We need to bring together owners, operators, architects, contractors, service and maintenance, engineers, manufacturer's

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reps, commissioning personnel, and other affected parties. We need to look at everybody involved and bring them together so we have a solution. Everyone needs to be involved in these integrated designs.

Students and STEM

Let me share some information about a new program. We have a student design competition that's an applied engineering challenge. Joel Primeau, our 2011–12 Student Activities Committee chair, has been leading the efforts to get this started.

According to Joel, Student Activities Committee is reaching out to a greater audience. ASHRAE has consistently done great work with colleges and university students from all over the world, with a steady stream of new student branches. Our expanded Student Program at our Winter Conferences now provides three days of activities for our students. ASHRAE's Student Design Competition continues to be successfully integrated into HVAC&R courses, and the number of entries continues to grow year after year. ASHRAE's Grants Program sees more applicants each year.

People are the solution. ASHRAE volunteers involved in the Community Sustainability Project program at work in their local community.

This year, we are reaching out to other engineering and technical students with a new design competition. This new design challenge is aimed at students who are not traditionally involved with ASHRAE and also for traditional schools that have existing engineering programs. The challenge focuses on both refrigeration and renewable energy, and will require teams of engineering students to design a portable, one cubic foot refrigeration unit powered entirely by renewable energy. You can find the details of this design competition on the ASHRAE Student Zone website (www.ashrae.org/studentzone).

Additionally, we are taking on big socioeconomic challenges, as we reach out to other like-minded societies to reinvigorate the STEM coalition (STEM stands for science, technology, engineering, math) to coordinate our efforts to get more K-12 students interested in careers in STEM. Chuck Curlin, K-12 activities champion extraordinaire, will head a new ad hoc committee on STEM. ASHRAE will assume a leadership role in getting more young people into engineering.

The other program described by Joel Primeau is for kindergarten through 12th grade STEM. The goal of this program is to work with teachers so they can help us educate students on the value of engineering and the wonderful opportunities for careers in engineering. One thing I learned when I attended a seminar on STEM was that parents in disadvantaged families do not understand what engineering is and how they can get their children involved. I had the advantage of parents who knew how to support me from the age of two. Not all children have that. It is critical that we help parents guide their children, get involved and help organize coordination and collaboration with other societies.

We have, in every city, in every community, many coordinated or collaborative efforts in which we could participate with other organizations, such as companies and other technical societies. If you watched the U.S. Golf Open, you saw that Chevron had many ads for STEM. Many companies are doing this with support from mathematics and scientific societies and engineering societies. All want to promote the concepts of STEM, but sometimes their efforts in a given community are not coordinated so that there is a duplication of efforts or there are no effective efforts. We want to get involved with helping coordinate the effort. That is something we can do to leverage our work with other societies.

Young Engineers in ASHRAE

Another exciting initiative that will help Broaden ASHRAE's Horizons is the first YEA Leadership International weekend, which will be held this August in Sri Lanka. We have had these YEA leadership weekends for years in Atlanta and the west coast of the United States, but this is the first to be held outside of North America. This serves as an excellent way we can develop leadership and it is being extended to many other YEA members.

Community Sustainability

Another activity that is very exciting is the Community Sustainability Project program. The inspiration to create this program came from something I saw at the local chapter level.

According to Dan Pettway, a member of the Board of Governors of the Hampton Roads Chapter and an incoming Society vice president, the Hampton Roads chapter of ASHRAE has teamed up with the Hampton Roads chapter of the International Facilities Management Association (IFMA) to help local not-for-profit organizations to help children and their families. We are calling the program E4K, Energy for Kids. And the formula is very simple, and one that any chapter can replicate to benefit their own local community. ASHRAE and IFMA members have teamed up to design and install energy-saving HVAC&R equipment and ductwork so that organizations can spend more of their valuable money accomplishing their mission and less for the cost of utilities.

To date, their partnership has installed a solar hot water system in an infant's home, installed four new systems in

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a brand new Habitat for Humanity quadruplex, and they are currently redesigning duct systems and installing new systems for a YWCA battered family shelter. In all of these projects, engineering know-how by ASHRAE members and facility management specialties from IFMA members have combined to provide these organizations with the most efficient up-to-date systems available today. The two organizations also partner to raise the revenue for these projects. Through an annual ASHRAE, IFMA golf tournament and an oyster and barbeque event, members of both organizations, who always enjoy golf and eating, enjoy it even more knowing they're contributing to these organizations and helping the children and the families of the Hampton Roads community.

To date, the organizations have combined to earn revenues of upwards of $40,000 to accomplish this work, and we've only just started. We're only in our fourth year. The Hampton Roads chapters of ASHRAE and IFMA invite you to take their example and replicate these programs and their benefits in your communities.

If you are on the Internet, search www.ashrae.org/community, and you will find more information about the ASHRAE Community Sustainability Projects program, including a toolkit. There is also a quick-start guide, a Frequently Asked Questions document and contacts for people who can help as well as case studies and a PowerPoint presentation for training. The program that the Hampton Roads Chapter has developed is tailored for smaller and mid-sized chapters.

This program is similar to the ASHRAE Sustainable Footprint Projects started by the Utah Chapter as part of ASHRAE Annual Conferences, in order to leave a legacy representing our commitment to sustainability and to offset the environmental impact from holding the Annual Conference. There is a footprint project right here in San Antonio, and there was one in Montreal for the 2011 Annual Conference.

Government Interaction

I would like to share another quote: "*As a society we should be interested in legislation for the protection of health and comfort.*" This comes from Walter Timmis, ASHVE president in 1919.

So what are we doing today that is different, since we have talked about this for many years? We are considering a grassroots government activities committee, which Jeff Gatlin, Region VII Director and Regional Chair, is spearheading along with member Eileen Jensen.

We are looking to governments in our local communities and at state levels and we are considering codes and standards education for code officials, translation of our technology into languages other than English, and training for code enforcement agencies. And once again, we are looking at STEM. In this case, we want to go to local school boards to look at curricula to ensure it involves sufficient STEM education. If we do not have STEM, all the research and development ASHRAE is doing and all the research ASHRAE is sponsoring will not benefit our communities. We have to educate our young people so they have challenging, fulfilling, and productive jobs going forward. It is vital for our communities.

Engineering for Change

This is another opportunity: Engineering for Change, a nongovernmental group of engineering societies founded by ASME (American Society of Mechanical Engineers), IEEE (Institute of Electrical and Electronics Engineers) and Engineers Without Borders USA. We are partnering with these societies so that ASHRAE members, chapters, sections, and regions can work on their projects. A lot of these projects really need ASHRAE technology and knowledge. This effort is about solving challenges. Does any group do this better than ASHRAE? I think not. This effort is about improving the quality of life for people around the world.

If Not Now, When? If Not You, Who?

I've mentioned a lot of new initiatives to you. By introducing these new programs, we hope to provide more options for participation as an ASHRAE member. Altogether, the choices might seem a bit overwhelming, but it's about finding the program that speaks to you and will allow you to make your greatest impact.

So what can you, the ASHRAE member, do? We need to focus on our greatest impact. We need to match the technology to the need. We need affordable regional technologies, and we need to benefit our communities and ourselves. By doing these things, you really benefit yourself as well. It is a great payback. I know you have thought of some things you can do. Act on those thoughts.

When you are looking at our technology and its applications, ask how you can get involved. If you are already involved, get someone else involved; get someone to help you. If you're not involved, get involved. Don't wait as long as I did. Today is the day to get started. Our community, your community, is counting on and depends on you. ■