

# Building a Better World

By Donald Colliver, Ph.D., P.E., 2002–2003 ASHRAE President

**A**s a child, I frequently went with my father to cemeteries around Kentucky. We spent many hours searching for tombstones bearing the family name. Our ancestors emigrated from England to the Kentucky area in the mid-1700s.

A few years ago, I traveled extensively in England. In the Oxfordshire archives, I discovered the 250-year-old parish register for the parish where my forefathers had lived. On the first page, I found the recording of the christening of the first Colliver to come to America more than two centuries ago.

Using my gloved hands I continued to turn the fragile pages of that old leather-skin covered book. After turning several pages, I noticed that the handwriting suddenly changed. I saw an entry that stated, "Died and buried this day, William Colliver, clerk of this parish." An eerie feeling came over me as I realized that I had been reading and could touch the handwriting of my father of nine generations ago who had passionately recorded the actions of that parish.

People sometimes ask me why I look back; why I study genealogy? My answer is simple. So we can know where we came from. So we can recognize the importance of building a world where nine generations from now they can look back and say, "This person built for me a better world in which to live."

This is true for ASHRAE as well. Generations of members from our "ASHRAE family" have worked to create a better world for us. For more than 100 years, ASHRAE and its predecessor societies have been successful. We have a great history with many accomplishments. It has been successful because it has provided the structure for people like you and me to be passionate about what is important to us: harnessing the power of nature and machinery to make the world a better place.

To be successful at anything, you must be passionate and have a strong foundation. ASHRAE has a strong foundation. A foundation consisting of our Handbooks, Journal and other publications, standards, research, technical committees, global out-

## About the President

Donald Colliver, Ph.D., P.E., Fellow ASHRAE, is an associate professor at the University of Kentucky in Lexington. He joined ASHRAE in 1981 and earned the Distinguished Service Award in 1995.

He has chaired several Society-level committees and coun-

reach, chapters and people. But what drives the construction of ASHRAE's structure is passion. Passion is our fuel. People being passionate about learning new information and better methods and then sharing them with others. People being passionate about development of their skills and talents, passionate about mentoring and nurturing, and passionate about making the world a better place to live through the application of technology.

This year we will be building on the past as we build for the future. One of my goals is to look at the infrastructure of ASHRAE to ensure that we are stirring the passions of our membership about our technology so we may leave the world better than we found it. This is how we will enable ASHRAE — and give each member the opportunity to make a difference in the world.

People around the world were shocked and saddened by the events of Sept. 11, 2001. ASHRAE President Bill Coad indicated in his message after those events, "As a society of engineers, it is in our nature to build. To witness purposeful destruction of lives, machines and structures is repulsive to us not only as human beings but doubly so as mankind's builders." I would like to add that our focus as a people is now on rebuilding. Not only rebuilding at Ground Zero, but in our society, in our way of life, and for many, in their personal lives. We feel a greater need to connect on a human level with one another. Statistics reveal since the September tragedy an unprecedented number of people have volunteered for community service.

Let this, then, be our opportunity to also rebuild. To strengthen the ways that ASHRAE lets people connect. To let them channel their passions through ASHRAE. Our world is changing very quickly — so must we.

We must build on our successes. We must use our passion to set goals that have a higher purpose. We must focus on raising performance and raising our contribution. We must challenge ourselves. We must have a new way to dream — we must lift our goals 15 degrees higher.

cils and is past president of the Bluegrass Chapter. He also has served as a trustee for the ASHRAE Learning Institute.

Colliver has written papers, articles and handbook chapters. He received the Journal Paper of the Year Award in 2000.

Colliver has a doctorate in agricultural engineering from Purdue University.



Raising our goals by 15 degrees means we cannot just look straight ahead and attempt to forecast just what's around the bend. We need to look up; use our imagination and dream about what we can build and what we can become.

Paraphrasing Thoreau, we must build our castles in the air and put foundations under them.

Join me to help ASHRAE set the foundation for realizing the dream of *Building a Better World*. To support our foundation, I propose four cornerstones: energy, environment, education and empowerment.

I'd like to review each of these cornerstones in more detail. However, I won't give you specific challenges or ways to accomplish these goals. We have committees, councils and individuals with many great minds to do this. Instead, I'd like to present a vision of some challenges and/or opportunities for us to use to build the foundation. Let us begin with energy.

ASHRAE gained recognition as an energy expert in the 1970s when we were asked to develop a national standard on energy conservation. We met that challenge. Standard 90 continues to influence building designs worldwide. It has become the basis for building codes, and the standard for building design and construction throughout the U.S. Through our efforts, buildings built to our current standards use significantly less energy than buildings built 30 years ago.

We have long been recognized as a leader in the efficient use of energy. However, we now face new and different challenges. For too long we have emphasized setting minimum requirements. While these are extremely important, we need to get back to what brought us excellence and look toward energy-efficient design.

We are being challenged to expand our involvement, and the potential for complexity is very real. We have found that a single document cannot effectively be used for multiple objectives. To maintain our status, I propose simplification and increased usability by creating within the next three to five years a suite of four types of documents related to energy efficiency.

The first type would be a set of three documents that would provide the bare minimums needed for residences, small buildings and large buildings. Some might call this set of documents suitable for use in building codes.

The second set of documents would be designed to give guidance to someone wanting to design and build a good, energy-efficient building — a set of documents that tell what's good practice. These could be used if owners specify they are going to occupy the building for many years. I see these documents as giving guidance on ways to increase the energy conservation of new buildings so that they use only 70% of the energy used by

buildings that are built to the 2001 version of Standard 90.1.

The third set would be documents that identify excellent practice. Documents that would tell me what I should consider using if my design goal is 50% of the energy used by buildings built to the 2001 version of Standard 90.

Last, I envision us publishing documents that include futuristic practices for innovators — something for designers who want off-site energy usage of 25% of buildings built 30 years ago. These documents would contain the latest research on innovative building practices and renewable energy sources. They would be the focal point for advanced practices — not only for developed countries but for developing countries as well.

This brings us to our second cornerstone — the environment. We have a beautiful world. A world that is extremely complex yet very, very fragile. We must always remember that our resources are not infinite.

Taking care of this world and protecting the environment is something ASHRAE has heavily focused on in recent years. Whether in energy, indoor air quality or refrigeration, ASHRAE has realized these areas are not separate. They are intertwined. If we are to protect our resources, we no longer can consider just one without considering the others. We must look at what's optimal for the entire system rather than each individual part.

A good example of this is ASHRAE's Technology Awards. Since they were created 21 years ago, the awards have recognized hundreds of members who have successfully applied innovative building design in the areas of occupant comfort, indoor air quality and energy conservation. These awards recognize

those designers who have cultivated far-thinking attitudes of honoring and respecting the world and its inhabitants.

The protection of the environment is more than an economic issue — it is an ethical issue. As professionals, we are called to conform to technical and ethical standards. Energy and the environment typically have not been considered any more than a design parameter. However, energy and the environment must be elevated from design parameters to moral standards.

The protection of our environment has two parts. We must consider both the outdoor and the indoor environments.

For the outdoors, we need to inspire the imaginative, thoughtful engineers and designers to take a long-range view of the implications of their actions and designs. Much attention is being given to the term "green buildings." We need to increase our emphasis toward developing tools to make it easier to design buildings with these attributes.

Also of great importance to the present day and to our indus-



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try is the indoor environment. Today's buildings are modern man's exoskeleton. We spend at least 95% of our time encapsulated indoors. And just like insects and other arthropods, we depend on our exoskeleton, whether it be buildings or vehicles, to protect us, to keep us safe from the environment and pollutants and to provide comfortable, productive living conditions.

The exoskeletons that encapsulate us are viable organisms that change over time. With modern-day controls, they react to climate and automatically respond to changing conditions

and occupancy. The occupancy and uses are flexible, and several years after construction the building rarely is operated as designed. Buildings may not be organic bodies but they certainly are dynamic, changing bodies that need physicals, check-ups, maintenance and care just as our bodies do.

The third cornerstone is near to my heart — education. We must transfer knowledge to ourselves and to others, and we must develop new information.

In transferring our wisdom to others, we should focus on our future — students in kindergarten to 12th grade. We need to show them the value and the importance of engineering.

One way ASHRAE reaches out to young people is by participating in National Engineers Week. This year, ASHRAE is the lead society for the celebration. You will hear more about this later in the year.

We also offer strong programs for the college age group. The excitement and enthusiasm shown in the Student Design Competition gives me faith that our young people are ready and eager to meet the complex challenges in our field.

We can dream of creating several new ways for educating our youth. I recently saw a virtual biology laboratory in which a frog could be dissected on the computer. I envision a similar development of a virtual building laboratory where someone could use a device to design, construct a building, and diagnose problems. This technology is being used in the medical and education fields. Why can't we use it for design, diagnostic and training tools for HVAC&R?

Finally, education is more than simply providing tables of data. We must develop new information and methods and show our members how to transform data into knowledge — and then use that knowledge with wisdom.

Our goal here will be to help people understand the new information. Unless what ASHRAE makes available can be put to use, by either practitioners or by researchers, it is of little value. We've started evaluating our publications. We are in the process of initiating a major rewrite of our Handbooks to make them more valuable to our membership.

This brings us to our fourth cornerstone — empowerment.



## Tough enough to tame a giant.



When Caterpillar Claas America LLC set out to develop a critical new assembly plant for agricultural equipment in Omaha, Nebraska, they had a litany of special design considerations to contend with. For aesthetic reasons, they wanted all HVAC system components to be concealed entirely within the interior of the facility. For clearance, no ductwork could be hung lower than 27 feet above the plant floor. And to move the necessary volume of air, the ductwork needed to be massive. More than 20,000 feet of flange duct connector needed to be installed on the ductwork, which measured in excess of 96" x 40". Given the requirements for this 200,000 square-foot giant of a facility, Ductmate was chosen for duct system components.

The inherent strength of the Ductmate 35 flange connection enabled engineers at Leo A. Daly to eliminate many of the internal reinforcements normally required to produce adequate rigidity in the ductwork. Ductmate Trapeze hangers reduced the number of man-hours needed to hang the system. The flexibility and labor-saving design of Ductmate's components meant Art Push & Sons contracting was able to get the plant operational within Caterpillar Claas America LLC's schedule.

And Ductmate's team of customer support engineers was always on call to troubleshoot any problems that might arise during the installation. Ductmate made quick work of a complex application, and production was completed on schedule.

Find out more about Ductmate's complete line of high-quality engineered duct system components. Call us at 800-245-3188 or visit our Online Information Center at [www.ductmate.com](http://www.ductmate.com).



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ASHRAE has two major assets. They are illustrated on the research promotion coin. On one side we have a representation of the knowledge base that defines us — our information — “Technology for a Better Environment.” On the other side, we have an individual representing a person in our industry. Just as the two sides of this coin are formed together to produce one body, ASHRAE’s power is linked by joining both sides of its coin — our people and our information. What will define us in the future are the methods we use to empower our people to gain this knowledge base.

One of our Society’s strongest resources is our volunteer base. Our power is our people. The power of our people will come from a passion for technology and striving for excellence.

We must expand our base from the traditional areas of membership. HVAC&R is no longer a matter relegated strictly to those in our industry. With concerns growing about energy, IAQ, bioterrorism and building safety, HVAC&R is becoming more of a team effort. Let us encourage participation in ASHRAE by other members in that team. We also must reach out even further to attract young people, particularly the 22–30 age group.

We must make our membership more valuable in terms of both money and time. My vision of looking 15 degrees higher is to see a 20% growth in membership in the next five years. The opportunities are there. Whether it be in transferring tech-

nical information, leadership development or management skills — we just need to capitalize upon them.

Energy, environment, education and empowerment — together, these four cornerstones give us E to the 4th power. This represents excellence in all we do.

I recall as a child seeing the little signs advertising that it was cool inside — come on in. It was cool to be in an air-conditioned theater or in a domed stadium. While our goal this year is to recapture the enthusiasm of when air conditioning was stylish, more importantly, we want to demonstrate that air conditioning and refrigeration are essential to our way of life.

As we build on our cornerstones, we must remember Albert Einstein’s words, “Imagination is more important than knowledge.” My friends, we are not lacking the materials or the money to build the foundation for a better world. We need to revitalize ourselves and our world with one more thing — the imagination to find them and to put them together.

Our programs, Handbooks, short courses, research, standards and our Web site are only paths that we follow as we pursue our engineering passion. Where these paths lead us is to a reconstructed and a stronger ASHRAE. An ASHRAE that helps each and every one of us make a difference in the world for our children and our children’s children.

An ASHRAE that helps us in building a better world. ●

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