

# Engineering Tomorrow's Quality of Life

By James E. Wolf

2000-01 ASHRAE President

**T**hose of us in the air-conditioning and refrigerating industry share a great heritage. A heritage that improves our quality of life through comfort control in the work place, in health facilities and in our homes—and it is a heritage that contributes to a basic necessity of life—refrigeration for food preservation and safety. This heritage of accomplishment is so widely accepted that it is often overlooked. However, this year, the U.S. National Academy of Engineering recognized air conditioning and refrigeration as the 10<sup>th</sup> greatest engineering achievement of the 20<sup>th</sup> century.

Our industry deserves this distinction because air conditioning and refrigeration are now common necessities that greatly enhance our quality of life.

Since the late 19<sup>th</sup> century, ASHRAE has had a major role in our industry's accomplishments by serving as:

- a recognized repository of technology,
- an educator of professionals,
- a developer of industry standards, and
- a researcher of new technology.

Ongoing ASHRAE research in your home will affect you in several ways, from controlling air pollution to helping reduce cooling and heating requirements.

Our early members believed that ASHRAE had the potential to make a difference in the building industry and to improve the quality of life for the general public. They were visionaries.

The same holds true today. We are people who turn ideas into reality, and our world is better for it.

Without air conditioning and refrigeration, we would not

## About the President

James E. Wolf, Member ASHRAE, is vice president of government affairs at American Standard, Arlington, Va. Wolf joined ASHRAE in 1967 and has chaired and served on committees at the chapter, region and Society levels.

He has received the ASHRAE Distinguished Service Award and Region III Award of Merit. He also is a past president of the National Capital Chapter.

have hospitals, commercial buildings, schools, homes and manufacturing facilities that are comfortable and healthy. Nor would we have many of today's modern cities. Without ASHRAE, we would not enjoy the quality of life as we know it today.

Our efforts improve the quality of life by helping keep indoor environments comfortable and productive, by helping to deliver healthy food to consumers and by helping to preserve the outdoor environment.

My theme, *Engineering Tomorrow's Quality of Life*, reminds us of the role we have played and of our responsibility in the future.

To illustrate the importance of our role, let me review three significant events that I have observed during my career. One major change to our industry, and in my opinion a defining event, occurred in the 1970s when our course and mission were forever changed due to an issue of worldwide concern. At that time, we moved from focusing on engineering issues related to building design and construction to also addressing the broader aspects of technical issues impacting the environment.

Our expertise in energy conservation was recognized in 1974, during the oil embargo and resulting energy crisis. ASHRAE accepted the responsibility for developing a voluntary consensus standard based on a document proposed by a U.S. organization, the National Bureau of Standards. ASHRAE recognized the need to apply its expertise to a problem that had the potential to cripple the world.

ASHRAE developed a design standard for energy conservation in buildings, Standard 90-75. It became Standard 90.1, the basis for building codes and the standard for building design and construction throughout the United States, and it influences designs worldwide. The development of this standard positioned

Wolf has been involved for many years in environmental policy issues for refrigerants. He chaired the Alliance for Responsible Atmospheric Policy in 1992-96, and is the chairman of the Climate Change Task Force of the Business Council for Sustainable Energy.

Wolf has a degree in electrical engineering from the University of Arizona and a master's degree in business administration from the American University in Washington, D.C. ●

ASHRAE in the forefront of advancing the arts and sciences of HVAC&R to "serve the evolving needs of the public."

Try to envision the world today if ASHRAE had not developed the energy design standard for building construction. Without ASHRAE's involvement, in the U.S. we might all still be setting our thermostats at 65°F (18°C) in the winter and 78°F (25°C) in the summer, as we did in the 1970s, under the Emergency Building Temperature Restrictions Program. Without ASHRAE's energy conserving standards, we could face other mandated controls over our buildings, and we could expect the cost of operating our buildings to be significantly higher than it is today.

ASHRAE's energy conservation efforts have helped to improve the quality and affordability of buildings. By 1985, new commercial buildings were as much as 25% more energy efficient than those constructed a few years prior. And, compared to many structures built in 1985, energy use in new buildings has been reduced by as much as 50%. This was during the time that Standard 90.1 was being used as a design standard.

Shortly after the energy crisis, another environmental concern emerged, and in my opinion, a second defining event: depletion of the ozone layer. In the 1980s, an international effort to limit the emission of ozone-depleting substances began, culminating in the Montreal Protocol in 1987.

ASHRAE took a proactive role in helping our industry to position itself as part of the solution to this environmental issue. We developed standards to classify refrigerants for safety, to promote the safe use of refrigerants in equipment rooms and to responsibly manage refrigerants. We also funded and managed research to develop products and systems that reduced ozone depletion. ASHRAE's refrigerant standards and guidelines have had a significant economic and environmental impact worldwide.

With ASHRAE's help, steps are being taken to restore the ozone layer. The good news is that the Montreal Protocol is working. Scientific assessment shows that the abundance of ozone-depleting chemicals in the lower atmosphere is declining. The ozone depletion in the Antarctic is continuing but will peak in the next few years. Reducing the risk of ozone depletion means less risk of health problems, less reduction in crop yield and less disruptions in the marine food chain. ASHRAE's efforts are helping to improve the environment and the quality of life.

Now we are facing potentially the biggest environmental concern of all, and, in my opinion, what will become a third defining event for ASHRAE.

On the horizon is an environmental issue that may impact the entire planet: global warming and climate change. We may already be seeing the effects of global warming. The world is experiencing the biggest thaw since the last ice age. Much of the tropics have become hotter and drier. Sea levels and ocean temperatures are rising, and the climate is changing. The past winter in the United States was the warmest in recorded history.

To slow global warming, we must control carbon dioxide re-

leases to the atmosphere, primarily through reduction in the use of fossil fuels. ASHRAE is helping to reduce energy use in new and existing buildings through its standards such as 90.1, which was revised this year. By providing such energy-efficient design standards and guidelines, energy use will be reduced in buildings, lessening energy-related impacts on the environment.

Energy reduction will have an economic impact as well. In our continuing focus on protecting the environment, our future means thinking green. The industry must move toward designing "best value versus lowest cost" buildings. In other words, we must think green holistically, the green of money, as well as the green of energy efficiency and resource sustainability. We must help owners learn that investing in HVAC&R translates into a high rate of return with a low associated risk. We, as engineers, need to speak in financial terms as well as engineering terms to communicate effectively with building owners and financial decision makers who view buildings primarily in terms of short-term economics.

The U.S. Environmental Protection Agency has developed a chart showing the annual rate of return and the associated risk of investing in HVAC versus stocks and bonds. To obtain the same return obtained by investing in HVAC, the EPA says you would have to invest in more unpredictable small company stocks. To obtain the level of low risk offered by HVAC, you would have to invest in U.S. T-Bills. Clearly, investment in energy conservation is a win-win situation for building owners.

Designing with global warming considerations is low risk. The resulting purchase value of buildings will increase, yielding higher returns. The best value in buildings is achieved through cost effective, energy-efficient designs. This shift in decision making will enable us to do the type of engineering that we have always wanted to do. We will have the opportunity to change existing economic models and focus on sustainability and life-cycle cost decisions. The opportunities are tremendous. Think about it for a moment.

- Manufacturers will design leak-tight and energy-efficient equipment.
- Consulting engineers will design energy-efficient buildings with life-cycle costs, systems that are designed to maintain their high energy efficiency.
- Contractors will construct buildings capable of performing according to the design.
- Facility engineers will maintain comfortable as well as energy-efficient buildings.

I am a strong believer in protecting our environment. Everything we do impacts the longevity and habitability of Planet Earth.

I believe that climate change will be a defining issue for the future of ASHRAE. It offers us an opportunity to be "proactive" rather than "reactive" on an issue of pressing environmental concern. Our business environment is changing and to flourish we need to consider and try new ideas.

Because of the climate change concern, ASHRAE has ex-



**James E. Wolf**  
**2000-01 ASHRAE President**

# Inaugural Address

panded its role in international policymaking. Last year, ASHRAE was granted accreditation as a Non-Governmental Organization (NGO) and given approval to participate at meetings of the United Nations Framework Convention on Climate Change and the Kyoto Protocol. The Kyoto Protocol sets greenhouse gas emissions limits for the 38 developed countries. It was established in 1997 and will eventually affect the activities of more than 180 countries. ASHRAE will strengthen its involvement in the global community by providing technical guidance on building-related technology in helping to mitigate climate change. This is especially important because buildings currently consume one-third of the world's energy.

We would not be where we are today without the contributions of the visionaries of the past. However, we, the ASHRAE members of today, must be the visionaries of the future.

Ask yourself: where will tomorrow's quality of life be without my contributions, my colleague's contributions, and all of our contributions in this great industry?

ASHRAE is more than an association or a technical organization. It is composed of people who are making a difference—now and in the future—for the six billion people living on Planet Earth.

ASHRAE helps you make a difference: with research grants, education, training, networking and peer interaction through strong chapters.

ASHRAE offers an opportunity to create awareness and change in the industry. Your increased involvement in ASHRAE

will help move the building industry to new heights. It will help building owners, managers and governments understand the importance and benefits of designing green buildings—green financially and green environmentally. This shift in attitude will increase demand for services and products offered by all of us.

How do we start moving forward today?

First, we can take pride in what we have achieved—the work that we have accomplished in the last 100 years. The members of ASHRAE have, on a daily basis, made a big difference in the lives of people around the world. We make buildings more comfortable and energy efficient, and we improve indoor air quality.

ASHRAE is your organization. Take pride in what we do and stay involved. You can help by:

- **Bringing more young people into the industry.** Offer them an internship. Support an ASHRAE scholarship. Mentor new technicians and engineers in our industry.

- **Increasing your participation in ASHRAE.** Write a paper, attend a seminar, volunteer on a committee, develop business relationships, recruit a new member.

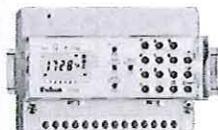
We can all help by:

- **Believing in our profession.** By developing the technology and creating the standards of the future, we are the ones who can meet the world's building-related challenges.

ASHRAE is an organization that others will look to in the future as one that helps define the quality of life. Together, we are "engineering tomorrow's quality of life." 

## TIME TO SWITCH!

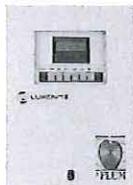
FROM ANALOG TO DIGITAL,  
**theben**  
OFFERS ONE STOP SHOPPING!



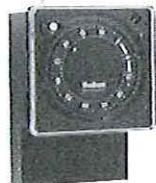
TR-613 3-Channel  
Digital Time Switch



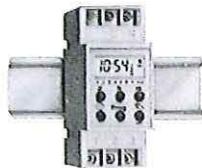
TR-654 4-Channel  
Digital Time Switch



8 Channel  
Programmable  
Time Control  
Plum-8



24 Hour and 7 Day  
Single and Dual  
Channel Analog  
Time Switches



TR-610 Single Channel,  
TR-612 Dual Channel  
Digital Time Switches

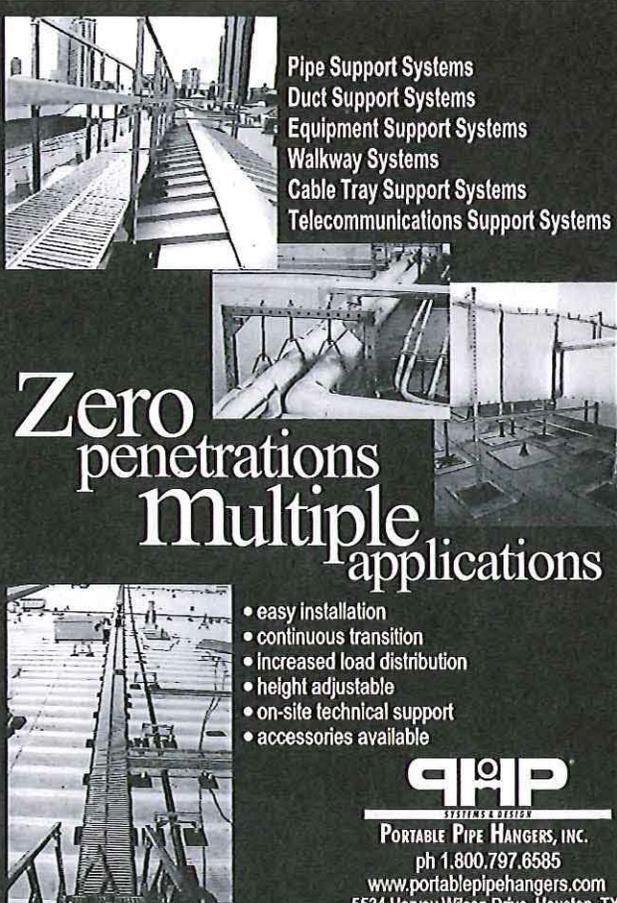
NATIONALLY DISTRIBUTED BY



2331 North 17th Avenue • Franklin Park, Illinois 60131-3475  
Phone (847) 455-1450 • Toll Free (800) 323-8510 • FAX (847) 455-0127

(Circle No. 35 on Reader Service Card)

August 2000



Pipe Support Systems  
Duct Support Systems  
Equipment Support Systems  
Walkway Systems  
Cable Tray Support Systems  
Telecommunications Support Systems

## Zero penetrations Multiple applications

- easy installation
- continuous transition
- increased load distribution
- height adjustable
- on-site technical support
- accessories available

**PHP**  
PORTABLE PIPE HANGERS, INC.  
ph 1.800.797.6585  
www.portablepipehangers.com  
5534 Harvey Wilson Drive Houston, TX

(Circle No. 37 on Reader Service Card)

ASHRAE Journal

33