

Optimum Energy Utilization Through Technology

RODERICK R. KIRKWOOD
ASHRAE President-Elect

WHAT has been termed "the energy crisis" in the news media, has been well publicized and needs no further emphasis. What must be better understood is that there is no true energy crisis at present, but one may develop in the next few years unless we take positive action now to prevent it.

You are all aware of the oil and natural gas shortages that existed last winter and those that may be worse this coming year. Much of this relates to government regulation of exploration and development of the resources, either directly by various agencies or indirectly by taxation policies. The net result is predictable: dollars needed for development will go to other investments where they can earn more or as much, but with a lesser degree of risk.

Government regulation is of grave concern and has resulted in the current activity in the U.S. Congress, which is attempting to set up a new agency with overall control of energy. This agency will try to eliminate the unbelievable number of agencies which now have regulations that may overlap and conflict. What will be done about the tax problems and the environmental problems is yet to be determined. However, a new energy policy will take time to achieve results. In the meantime, we can expect continuing shortages both in natural gas and in crude oil, and even in refinery capacity to handle domestic as well as foreign crude oil for delivery to market.

How does ASHRAE enter this picture? ASHRAE's membership is concerned about utilization of energy, not with its production. We, as engineers, designers, manufacturers and technicians, can help to reduce the shortage of energy by using our technology to assure that the utilization of energy is optimized. If we don't take the forefront in this, we must expect others to take over. A good example is the New York Professional Engineers' ar-

ticle advocating curtailment of all air conditioning to reduce the power shortage. Such solutions don't make any sense: the efficiency of those who live and work in New York without air conditioning would be adversely affected and the standard of living would be immeasurably downgraded. This is an emotional, not a rational, answer to the problem. To offset such ideas we must emphasize the capability of our technology to find solutions.

Furthermore, various levels of government may establish consensus standards to legislate control of building design, as well as design of heating, ventilating and air-conditioning systems and commercial refrigeration plants. These standards, if prepared by people with little real experience, could end up as a straight-jacket that will prevent innovation and growth in our industry for years to come.

ASHRAE, through its publications and its technical presentations at Chapter Meetings, Regional Conferences, Society Conferences, Society Meetings and special topic-oriented conferences, must be a leader in disseminating existing and new technology for use in the design of systems optimizing energy utilization.

The Society is already working with the General Services Administration (see *ASHRAE JOURNAL*, May 1973, p. 57) to help evaluate their pilot project on energy conservation planned in Manchester, NH. ASHRAE's efforts must include upgrading of energy utilization in existing buildings and plants. We must also produce Standards which set the basis for performance, but allow the designer to use his technology and ingenuity to do the best job possible considering all parameters. ASHRAE must also continue to expand its research program to determine and increase the basis for further development of the technology that can be applied to optimizing energy utilization.

These are the important factors every member of ASHRAE must communicate, not only to his fellow members, but to his clients, to industry, to

his customers and to the public. This communication can control hysteria and create an atmosphere conducive to using our technology at its highest level for the public good.

I believe that ASHRAE members can have a significant effect on reducing the energy shortage not only in the United States but throughout the world. About 20% of the energy used each year in the United States is for space heating, and somewhere in the order of another 7% is used for air conditioning. Still more is used in commercial and industrial refrigeration and ventilation. With just the proper maintenance, operation and repair of existing systems we should be able to save 10% of this energy or as much as 3% of the total energy requirements of the nation. Comparable savings can be made in Canada and, while Canada has an excess of natural gas for export, its needs have an effect on what can be made available to reduce the shortage in the U.S. The potential for savings in new projects by application of existing technology and equipment should result in savings in the order of 25% of the energy that would otherwise be required. This same order of savings could be accomplished by upgrading of existing systems as well. The next step is to develop new technology and products that will allow even greater savings.

I believe that our goal should be a saving of 8 to 10% of the total energy required for the U.S. by 1983. That's only 10 years away, and is a big order. However, if we as a Society dedicate ourselves to this goal, it can be attained without lowering our standard of living and without stopping progress. In fact, we will have many plusses from the peripheral results. While we know that energy costs will be increasing substantially in the years to come, optimum energy utilization will help offset these, and careful application of our technology will reduce life cycle costs. Also, every Btu that we save will result in just that much less thermal and air pollution. These are worthwhile goals even without an energy shortage.

R.R. Kirkwood is Partner & Director of Operations, John Graham and Company, Seattle, WA.