

Energy Efficiency... an Overlooked Resource

As mentioned in previous “Sustainability” articles, one primary objective of sustainability is energy efficiency. By finding better ways to use energy resources, society can maximize the benefits of these resources to serve a growing global economy. Some people are interested in the environmental impacts of energy efficiency while others are focused on the economic implications. There is something of interest in this discussion.

We are all aware of the dependency on oil in the U.S. We currently have about 2% of the world’s known reserves and use about 25% of current production to serve 5% of the world’s population. Clearly these numbers cannot be sustained forever no matter how much we are willing to pay for petroleum-based products.

In addition, America has developed an aversion to increasing the use of coal and nuclear power for environmental reasons. The coal industry continues to make great strides in the burning process, but there still is a long way to go. The disposal of fly ash continues to be a major concern. Storage of nuclear waste is often cited as the primary reason we cannot expand the use of nuclear power. Also, with many existing nuclear power plants reaching the end of their design life, there are critical questions

that must be answered soon just to maintain the current contribution to our power supply. Of all the available sources of energy, the nuclear option has the greatest potential with current technologies.

The other commonly mentioned sources—solar, wind, and geothermal—have not demonstrated economic viability on a commercial scale.

We generally do not regard energy efficiency as a resource, but it is frequently overlooked when discussing energy sources. Getting more out of existing supply is just as good as any other alternative. Manufacturers can evaluate their processes for improvements; the construction industry can build more efficient structures; and the transportation industry can produce lighter, more energy efficient vehicles. Our challenge is to discover methods of production to extract more energy from our existing usage or to reduce the energy required for the same tasks.

The Alliance to Save Energy (ASE), a coalition of business, government, environmental, and consumer leaders, estimates that it is possible to save up to \$200 billion by the year 2020 by taking advantage of current technologies and implementing new standards.

The ASE suggests the following three-step strategy. First, we should stop the bleeding by improving current structures and systems. Second, improve maintenance procedures and make energy-smart choices a primary part of operating procedures. Third, invest in technologies to improve energy efficiency. Activities that will help implement this strategy include the following:

- Research and development to create new technologies;
- Financial incentives in the form of tax credits and rebates;
- Public education and awareness; and
- Standards and codes that set a common baseline.

This alliance notes there are tax incentives for consumers and businesses on the horizon. Beginning in 2006 and lasting through 2007, there are a number of tax incentives available for taxpayers making energy efficient decisions in building and remodeling homes and businesses and in the purchases of hybrid vehicles. The IRS is currently creating rules and forms for these incentives. To learn more about the alliance, visit www.ase.org.

How does energy efficiency affect the shotcrete industry? The two most prominent ways our industry can contribute to energy efficiency are in the increased use of byproducts such as fly ash and ground slag in shotcrete mixtures, reducing the use of portland cement, and by constructing concrete structures designed to provide significantly improved insulating characteristics over conventionally framed buildings. The energy efficiency of concrete structures is well documented as is their durability. Combined with the other advantages of building with the shotcrete method of concrete placement, our industry is in position to provide society with structures that serve the intended purpose while minimizing the environmental impact of building and operating those structures.