Looking to the Future: The Hydrogen Energy (H2E) Center

How will we meet the energy needs of over six billion people in an increasingly industrialized world? Oil production in the U.S. peaked in the 1970s, and will soon peak globally between 2010 and 2020. While other fossil fuels exist, the release of CO2 from these fuels will only accelerate global warming. It is clear that fossil fuels cannot continue to meet our energy needs, and that new sustainable sources need to be developed to generate electricity and provide energy.

The Hydrogen Solution

With the depletion of fossil fuel sources, we are witnessing the global emergence of a “hydrogen-based” fuel economy. An energy infrastructure based on hydrogen will avoid many problems inherent to fossil fuels. Hydrogen is environmentally friendly, as hydrogen oxidation with oxygen produces harmless water. Hydrogen is not a greenhouse gas and does not contribute to climate change. Due to its low density, if hydrogen is released into air, it will escape from the atmosphere into space. If released into the soil or other environments, it is readily degraded by bacteria.

Pioneering Research

Penn State researchers are leading the way in developing new technologies related to hydrogen energy and fuel cells. Their work on hydrogen storage, production, and fuel cell technologies will enhance the growth of a new global hydrogen infrastructure.

The mission of the H2E Center is to:

- Serve as a focal point for the multi-investigator activities at Penn State in the various colleges, centers, and institutes on hydrogen production, storage and utilization systems.
- Facilitate the development of all types of hydrogen-based (production and consumption) technologies.
- Promote the use of hydrogen for sustainable energy production.
- Develop coupled biological hydrogen production and fuel cell systems for complete conversion of biomass sources to energy.
- Pioneer new hydrogen storage technologies.
- Identify new uses of hydrogen for environmental remediation.

Details of the Penn State projects are available on the H2E Center website.

Visit us anytime at: www.engr.psu.edu/ce/enve/H2E