

Why Consider Hydrogen?

Hydrogen is a renewable energy source that can be manufactured from any substance that contains hydrogen. It is one of the most abundant elements on the planet. While it does not readily exist alone in nature it can be produced from water and methane, both of which are domestic resources. Hydrogen use can reduce local emissions in congested areas and also help alleviate U.S. dependence on petroleum imports.

Scientists have discovered that even some algae and bacteria give off hydrogen!

Health Benefits of Hydrogen



- Hydrogen is naturally-occurring and poses no immediate health threats
- Emissions from hydrogen vehicles are mostly water
- Fewer localized emissions than conventional vehicles can prove beneficial in congested urban areas

Environmental Benefits of Hydrogen



- Hydrogen is exceptionally safe for the environment
- Compared with other fuels used in internal combustion engines (ICE), hydrogen burns the cleanest
- Spilled hydrogen will quickly evaporate; hydrogen poses minimal threat to plants or animals

Economic Benefits of Hydrogen



- U.S. deposits of natural gas can be converted to hydrogen
- Domestic hydrogen production creates jobs
- Use will help supplement diminishing supplies of fossil fuels
- Government and private investments in the hydrogen fuel cell industry have allowed the U.S. to become a leader in the segment

Energy Security Benefits of Hydrogen



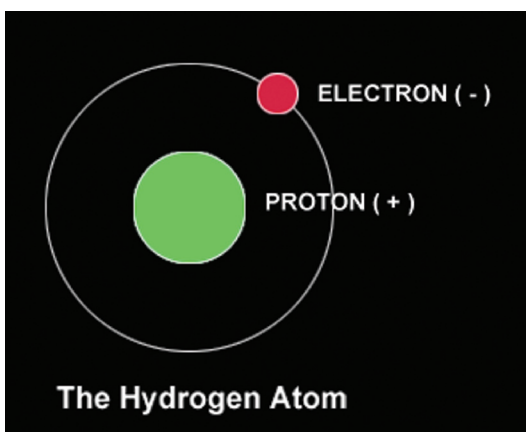
- Hydrogen can be produced domestically
- Domestic production utilizes U.S. produced methane or electricity
- Can significantly offset petroleum use

SPECIAL NOTE: Hydrogen leaks in confined spaces do have the ability to displace oxygen.

What Is Hydrogen?

Hydrogen is the simplest element in the universe. It naturally occurs in gaseous form. Hydrogen can be used to create energy through either combustion or use within fuel cells. It is naturally odorless and colorless, but will burn with a pale blue flame.

Hydrogen as a Fuel



The hydrogen atom.

Hydrogen has been used as a fuel in some stationary and vehicular applications.

Research is being conducted to determine the most efficient way to produce, store, and transport hydrogen. Hydrogen is available in a limited number of locations, but as the demand grows, the fuel will become more widely available.

Hydrogen is typically assigned an octane rating of 130. Thus, when used in an ICE, hydrogen can utilize a higher compression ratio than conventional gasoline engines. When stored in a vehicle, hydrogen may either be in gaseous or liquid form. Fuel cell electric vehicles are the current focus of hydrogen use in the transportation sector.



Did You Know?

Natural gas reforming using steam accounts for about 95% of the approximately 9 million tons of hydrogen produced in the U.S. annually.



Fuel cell-powered vehicles

What Vehicles Can Use Hydrogen?

Hydrogen can be utilized in hydrogen ICE vehicles, dual-fuel hydrogen vehicles, and hydrogen fuel cell vehicles. Each of these vehicles uses the hydrogen differently.

Currently, there are few hydrogen vehicles available to consumers. However, many automotive manufacturers are testing prototype vehicles to determine the most efficient way of utilizing hydrogen. As the national hydrogen infrastructure continues to expand, these vehicles will become more readily available.

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