As I got back into the driver's seat having just spent more than $50 to fill up my SUV, I heard an interesting NPR www.npr.org news story on the coming hydrogen economy that made me want to learn more about the viability of hydrogen as a legitimate alternative source of energy in the U.S. Although this column steps away from a direct connection to maintenance and reliability, I hope you will share my interest.

The oil economy has led to many political, environmental, economic, and other human-centered problems. With the rapid rise of oil prices and terrorism creating a new urgency to rid ourselves of foreign energy dependence, clean fuel alternatives now seem more real than ever. Technology and investment is moving at a pace for hydrogen fuel production and hydrogen-powered fuel cells to become economically viable within a decade.

On June 25, 2003, the U.S. and the European Union agreed to collaborate on the acceleration of the development of the hydrogen economy. The $1.2 billion Hydrogen Fuel Initiative, announced on January 28, 2003, envisions the transformation of the nation's transportation fleet from a near-total reliance on petroleum to steadily increasing use of clean-burning hydrogen according to the White House .

Jeremy Rifkin, author of The Hydrogen Economy: The Creation of the World Wide Energy Web and the Redistribution of Power on Earth www.amazon.com , reports that more than 1000 companies around the world are already racing to the hydrogen future; the speed-up in R&D and market introduction is reminiscent of the early days of the personal computer revolution and the emergence of the World Wide Web. One telling fact is that Shell Oil already has invested heavily in two hydrogen technology companies.

A recent study by PriceWaterhouse Coopers www.pwcglobal.com forecasted that in less than 18 years hydrogen technologies and related goods and services will exceed $1.7 trillion in worldwide sales.

Think-Hydrogen points out that without hydrogen's special qualities there would be no life on this planet. Examples include:

• Every water molecule on Earth contains two atoms of hydrogen.
• Plants use sunlight and the hydrogen in water to produce the oxygen we breathe.
• Through the process of fusion, hydrogen causes the sun to shine.
• 9 percent of the human body is made up of hydrogen.
• Hydrogen, when used in a fuel cell car, produces clean water as a by-product and causes no pollution.
• Hydrogen is infinitely recyclable, being derived from water and, when used as an energy source, is converted back into water.

General Motors has invested hundreds of millions of dollars in fuel cell research with the ultimate goal of removing the auto from the environmental equation because it believes the automobile leads the way to the hydrogen economy and a truly sustainable future. As alternative technologies to the internal combustion engine evolve, GM is developing a portfolio of options, including hydrogen-powered vehicles.

Unlike a combustion engine, in which exploding gas pushes pistons, a fuel cell engine strips electrons from hydrogen and uses the resulting electrical current to power a motor. Then it combines the remaining hydrogen ions (protons) with oxygen to form water, the only by-product.

Maintenance and reliability professionals should get up to speed with the technologies surrounding hydrogen production and use. A great place start is the How Stuff Works site .

If you prefer a more hands' on approach to learning, visit the Fuel Cell Store for actual demonstration products that will get you up to speed as a hydrogen economy pioneer in a hurry.

In addition to Rifkin's book, one of the better books that should appeal to those with a technical nature is Tomorrow's Energy: Hydrogen, Fuel Cells, and the Prospects for a Cleaner Planet by Peter Hoffmann and Tom Harkin. Search Amazon.com for a discounted copy.

Yes, Virginia, there is a hydrogen economy and it should be on your radar screen. Search Google
to learn more about this exciting new area to lead the pack. When your company installs its first fuel cell, you will be far ahead of the learning curve.

How will things change for you and your company in a hydrogen economy? There may be no effect over the next few years; however, that does not mean you should not start to have an awareness of the impact of this important energy source. With a consistent effort and steady financing including tax incentives from government coupled with a continued trend toward high fossil fuel prices, the hydrogen economy could be upon us in less than 10 years. However longs it takes, I hope the world is ready to move beyond the age of fossil fuels and toward the hydrogen economy. Let the fuel cell revolution roll.

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PdM-2005, The Predictive Maintenance Technology Conference and Expo
, on September 19-22, 2005 in Indianapolis, IN