

Empowering hydrogen

The Oregonian

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SUMMARY: Newberg man dreams, then creates hydrogen power Abe Fouhy has big ideas and practical experience on harnessing the element. Empowering hydrogen/ Fouhy helps create classes on clean fuels.

Empowering hydrogen

A lawn mower experiment ignites an Oregon man's pursuit for clean energy.

The first time, the flames from the lawn mower were large enough to alarm the neighbors.

Trying to get a hydrogen-powered mowing business off the ground, Abe Fouhy and a small band of hydrogen experimentalists were "just dumping fuel in there," Fouhy remembers.

Over time, Fouhy and friends learned to ratchet back the hydrogen and get two hours of mowing time. They even used the energy to cook eggs on top of the exhaust pipe.

Now, Fouhy's garage at his Newberg home is a repository of hydrogen-powered devices, dismantled and intact, waiting to convince the next visitor of hydrogen's potential. There's the fuel cell the size of a playing card. The lawn mower. The hydrogen tanks and, of course, his dual-fuel car.

Hydrogen's promise grabbed hold of Fouhy when he was a teenager and hasn't let go.

Now 28 and the president of the Northwest chapter of the American Hydrogen Association, Fouhy hopes to parlay his passion into a career.

The computer consultant sees a future where new housing developments pay for a community electrolyser that would use solar power to convert water into hydrogen to run everything in the neighborhood.

Imagine, he says, no electric, natural gas, fuel or diesel bills. It would be a modern twist on the independent spirit that Oregon was founded on. "We just have to get through a lot of mindsets that we're not smart enough or we're not savvy enough to do it ourselves."

Hydrogen-powered cars may be on the horizon. Early last year, Chevrolet launched a test fleet of hydrogen-powered Equinox Fuel Cell vehicles in New

York, Washington, D.C., and Southern California.

Of course, hydrogen isn't perfect. Buying hydrogen is expensive and using fossil fuels to make hydrogen, which is the easiest way, isn't particularly green.

Making your own hydrogen can be cheap and sustainable if you have solar or wind power to separate the hydrogen from water.

For Fouhy, it's triggered a commitment to alternative fuel that has led to a litany of do-it-yourself accomplishments.

In the nearly 10 years since the first lawn mower experiment, Fouhy has converted three cars to run on hydrogen; built a fuel injection system from scratch; built fuel cells and hydrogen production devices; and developed classes on alternative fuels for the University of Montana. This fall, he plans to teach a similar class at **Clackamas Community College**.

All while still seeking to finish his bachelor's degree.

Fouhy, an unassuming descendant of farmers, says it's easier than people think to make a small fuel cell or to convert to alternative fuels. He bought a car for \$5,500 that was modified to run on natural gas, then started mixing in hydrogen. When gas prices passed \$4 a gallon, he was protected.

He's finishing up a few credits at **Clackamas Community College** this year, with hopes of applying to the renewable energy program at Oregon Institute of Technology. He also interns part time at a fuel-cell technology company in Beaverton.

Fouhy stands between two \$200,000 industrial electrolyzers at ClearEdge Technology that are almost as tall as he is, looking as excited as a boy next to a firetruck.

College partnership

At **Clackamas Community College**, he has partnered with the automotive department to create a course on alternative fuels, particularly hydrogen, said automotive instructor Rick Lockwood.

"Abe is actually building a course for us, building a curriculum," Lockwood says. "His knowledge is pretty extensive."

The school borrows his car, a converted 1999 Ford Contour, to do extensive testing on hydrogen-powered vehicles. If Lockwood can find funding, he hopes to convert all of the college's vehicles to clean hydrogen power.

Fouhy doesn't plan to stop at cars and lawn mowers.

His big idea is to convert his 1905 farmhouse in Newberg to run solely on hydrogen power.

The upfront cost to make your own hydrogen can be high, though tax credits mitigate it. Fouhy estimates it would cost at least \$100,000 for an electrolyser and solar panels.

"That would be something I would love to see in everybody's house," he says.

It's cheaper to start with natural gas, but "making hydrogen is pointless unless it's made from renewable sources. If you make it from petrol, you're not doing anybody any good," he says. "You've pretty much negated the value of it."

Fouhy sees his logical next step at the Oregon Institute of Technology, but it's a challenging road.

Lots of applicants

The institute will have 40 spots in its renewable energy program this fall and already has 400 applicants, says Robert Bass, assistant professor and program director. Plus, hydrogen technology still lags behind the more immediate promise of wind and solar power.

Fouhy hopes his experience helping formulate other school's curriculum will help him when he applies to OIT. The University of Montana still teaches an alternative fuels course he helped develop about five years ago --before the school even had a renewable energy program.

And, of course, there are those demonstrations Fouhy still runs through the hydrogen nonprofit: barbecues and lawn mowers.

"People just need to realize that hydrogen is a safe fuel," Fouhy says. "We've done some pretty sophisticated stuff on our own."

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Abe Fouhy, Hydrogen Power Evangelist



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Abe Fouhy, (right), uses calipers while building a gas volume meter to test a recently constructed electrolyzer. The electrolyzer has been a collaborative effort with friends Kris Laib, (left), and Eric Wheeler, (middle). The three have been friends more than twelve years since their high school days in Newberg. Steve Gibbons/Special to The Oregonian

http://photos.oregonlive.com/oregonian/2009/03/abe_fouhy_hydrogen_powerengine_1.html



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Abe Fouhy, and his friends Eric Wheeler and Kris Laib machine many of the parts they use to create an electrolyzer and gas volume meter. Their friendship extends more than twelve years since their high school days in Newberg. Steve Gibbons/Special to The Oregonian