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ENERGY

Who needs gasoline if you have old beer?

The MicroFueler makes ethanol out of organic waste in minutes. It can be installed at individual homes, and companies are eager to supply owners with garbage.

August 22, 2009 | Susan Carpenter

It sounds too good to be true: A residential system that allows people to make fuel from old beer, leftover wine and other waste products and use it to run their vehicles.

That's what inventors of the E-Fuel MicroFueler claim, and there's support for the idea in government, industry and pop culture. MicroFueler buyers are eligible for a \$5,000 tax credit. Former L.A. Laker Shaquille O'Neal is an investor in the system's distributor.

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The \$10,000 E-Fuel MicroFueler consists of a 250-gallon tank for organic feedstock, such as waste wine and beer, and a still that converts it to pure ethanol, or E-Fuel. The still doubles as a fuel pump, which works similarly to those at gas stations. The only waste product is distilled water.

"If we give everybody the ability to make their own fuel, you break the oil infrastructure," said MicroFueler inventor Tom Quinn, a Silicon Valley entrepreneur who also developed the motion-control system for the Nintendo Wii gaming system, a version of which is used in his new micro-refinery.

"Three years ago, I looked at where the world was going, and energy caught my eye," said Quinn, chief executive of E-Fuel Corp. in Los Gatos. "As a world, we had no replacement fuel for gasoline, and that led me to alternative fuels such as ethanol."

The problem with ethanol, Quinn said, was energy inefficiency -- not only in the carbon cost of growing, harvesting and transporting the corn that was used to make it, but also in the distillation process that turned it into usable fuel. Many environmentalists are critical of corn-based ethanol, saying it is an inefficient fuel that uses valuable cropland and increases food prices.

"In the U.S. alone, more than 100 billion gallons of organic fuel is thrown out," said Quinn, who reached out to ethanol scientist Floyd Butterfield to see if they could collaborate on a system that could make ethanol in a manner that was cost effective and better for the environment.

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The idea was to use organic waste rather than corn to make a product known as cellulosic ethanol.

Although Quinn's MicroFueler is most effective with wastes that are high in alcohol, ethanol "can be made out of any waste -- lawn clippings, dairy products, old chemicals, cardboard, paper, bruised and discarded apples from the grocery store. It can be fermented and turned into fuel in minutes," Quinn said.

So far, only one MicroFueler is up and running. It was installed in late June at the Pacific Palisades home of Chris Ursitti, CEO of GreenHouse International Inc., the San Diego firm that is distributing the units and supplying feedstock to those who install MicroFuelers at their homes.

"You just open up the hatch and pour in some waste and it turns it into fuel for the car," said Ursitti, who's been using homemade ethanol to run his flex-fuel-converted Lexus hybrid SUV.

GreenHouse has contracts with Karl Strauss Brewing Co., Gordon Biersch Brewing Co. and Sunny Delight Beverages Co. to convert 29,000 tons of their liquid waste using MicroFuelers.

Though Ursitti is the only one now using the system, the plan is for a tanker truck to pick up the companies' waste and deliver it to home-based MicroFuelers, which convert it to ethanol on site. MicroFueler owners are charged \$2 a gallon once they pump out the fuel.

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"What they need, we have. What we need, they have," said Karl Strauss CEO Chris Cramer, referring to his San Diego company's symbiotic relationship with GreenHouse, for which no money is changing hands.

Before entering the feedstock pilot program with GreenHouse, Karl Strauss took care of all its beer-brewing waste products by paying outside companies to destroy beer that had passed its freshness date and farmers who fed the spent brewing grains to their pigs. Now GreenHouse is using expired beer.

"Because we're a fairly large craft brewer, there's a lot of yeast, a lot of beer going around," Cramer said. "Any drops of beer that don't go into a bottle, we'd like to make ethanol and fuel vehicles."

Converting expired beer and other liquid wastes into cellulosic ethanol takes minutes and uses three kilowatt-hours of electricity to produce one gallon of fuel.

In addition to powering vehicles, the fuel could run a "gridbuster," or home generator, which produces 23 kilowatt-hours of electricity per gallon, GreenHouse said.

Factoring in the \$5,000 federal tax credit, an annual household fuel consumption of 2,080 gallons and a \$2 charge a gallon, GreenHouse estimates the average consumer payback time is about two years.

Ethanol has less fuel value than gasoline, meaning a car will travel fewer miles on a gallon of ethanol than on a gallon of gasoline. But it also creates 38% less carbon dioxide than gasoline when burned, according to Quinn.

The U.S. Environmental Protection Agency "has not been called upon to analyze the environmental impacts of [organic ethanol] in comparison to gasoline," EPA spokeswoman Cathy Milbourn said. However, she said, "using waste products derived from renewable sources . . . would likely lead to an overall smaller carbon footprint in comparison to a food-based feedstock" such as corn.

It's legal to make up to 10,000 gallons a year of alcohol fuel, such as ethanol, on one's own property as long as it isn't sold to others. An alcohol fuel producer's permit from the U.S. Alcohol and Tobacco Tax and Trade Bureau is required.

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