

REGION

Grease is the word in biodiesel energy

By Tim Wacker

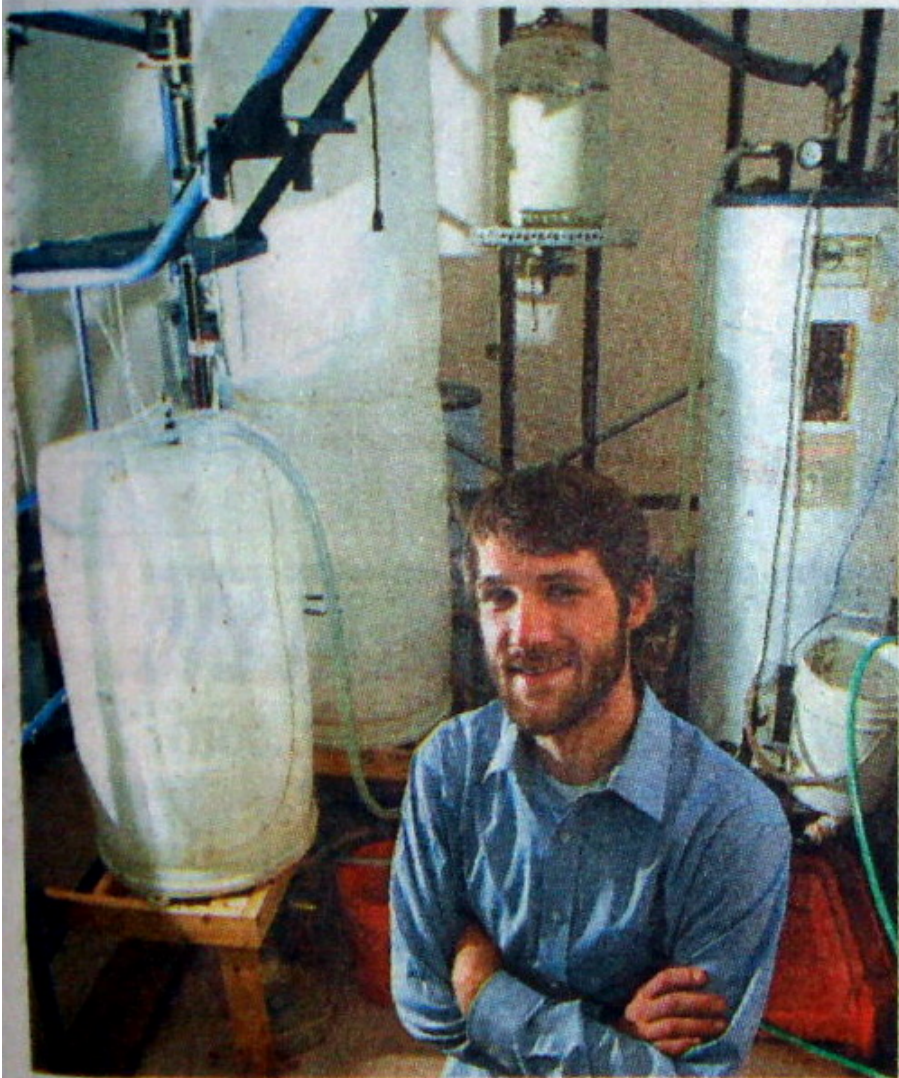
GLOBE CORRESPONDENT

The North Shore's fondness for fried clams is helping to fuel a boom in biodiesel energy.

The vegetable oil drained from the deep fat fryers, once considered trash by hundreds of seafood restaurants between Portsmouth, N.H., and Boston, is now being hauled off for free by companies that turn it into greasy gold.

"We've probably got over 200 restaurants that give us their oil," said Jim Proulx, owner of Green Mountain Biofuels, a waste-oil hauler based in Newmarket, N.H.

"But on the North Shore, the quality of the oil is better," Proulx said. "Probably because they are using it to cook clams and fish more. It's not as overworked as it is with other fried foods."



JOEL REITER FOR THE BOSTON GLOBE

UNH chemical engineering major Joe Pearson in front of a biodiesel processor he helped build two years ago.

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Green Mountain is a subsidiary of MBP Bioenergy, also a Newmarket, N.H., company that operates a biodiesel refinery in West Bridgewater.

That refinery takes used vegetable oil, filters it, and treats it to produce an earth-friendly fuel for oil burners or diesel vehicles.

Last year, MBP produced about 5,000 gallons of biodiesel from waste vegetable oil, Proulx said. This year, it produced 150,000 gallons.

High gasoline prices and a "going green" trend are heating up competition in the biodiesel business, while inventors tinker with new mixtures and methods of production.

In Salem, N.H., Atlantic Biodiesel says it has a new production plant now producing 80,000 gallons per month. By next month, that number should hit 200,000 gallons per month, according to company cofounder Tim Hickey.

It's not just waste vegetable oil being burned in local cars and home heating systems.

Another New Hampshire start-up company, Simply Green, in Stratham and Portsmouth, says it is enjoying the same kind of success after just seven months in the business using biodiesel produced from unused soybean oil produced by another refinery, World Energy in Chelsea.

Simply Green owner Andrew Kellar said the trucking he does in his lawn seeding company and a desire to protect the environment prompted him to get into the business.

The recent spike in gasoline prices and concerns over global warming helped make it a profitable decision.

"Business has been fantastic," he said. "We took our first delivery of biodiesel seven months ago and now we're getting calls from all walks of life. Trucking companies, golf courses, people from all over the place are searching us out."

Biodiesel is refined from oil produced by plants that consume carbon dioxide, a primary cause of global warming.

When you live in an environmentally sensitive place like New England, that's a big selling point, Kellar said.

Kellar and Proulx ship bulk quantities of biodiesel, with a 150-gallon minimum for Simply Green. If you want to fill your car's tank, the Newmarket Mini-Mart in Newmarket, N.H., is one of few gas stations with a biodiesel pump.

Station manager Mark Patel said recent fuel price increases have helped increase interest in his biodiesel, which is now about equal in price to regular diesel.

As a result, Patel said, people from Maine and farther are pulling up to the biodiesel pump at Mini-Mart.

'Trucking companies, golf courses, people from all over the place are searching us out.'

ANDREW KELLAR
Simply Green owner

"It's becoming very popular; it's just like regular diesel fuel," he said. "When people come in, they usually ask a whole lot of questions. But once they try it, they always come back."

Those questions usually involve: Is it safe for cars and is it safe for the environment?

Patel and Kellar said yes to both, but only diesel engines. Most biodiesel is blended with regular diesel, usually with between 5 and 20 percent being from refined vegetable oil.

Students at the University of New Hampshire in Durham are coming up with one possible means for getting more used vegetable oil processed into fuel.



JOEL REITER FOR THE BOSTON GLOBE

Chemical engineering major Joe Pearson inspects some biodiesel fuel made from vegetable oil in a UNH laboratory.

Working with a grant from the New Hampshire Innovation Research Center, they are putting together a homeowner's version of the waste vegetable oil refinery.

It's still a work in progress, says Ihab Farag, a biochemistry professor at the school. But it is hoped that by April a prototype will be assembled that will allow UNH to filter and process the waste oil it drains from university fryers.

Eventually, the group hopes to patent a small-scale, self-contained biodiesel processor that you just fill with the proper ingredients to produce fuel.

"There are people who are doing this kind of thing in their garages right now," Farag said. "You can go any place that discards vegetable oil, process it, and use it in your car or home."

Precautions come with Farag's explanation of the system he is designing. Most important is that harsh chemicals are involved, which must be handled carefully.

There is also a waste product called glycerin from the processing that must be disposed of. Re-

fining biodiesel from any form of vegetable oil, new or used, is not for everyone, Farag said.

"You have to follow the steps carefully," he said.

Farag said that used cooking oil probably will not be a reliable source of fuel for these processors if demand continues to climb, but oil produced from plants such as algae could eventually make a dent in the nation's appetite for fuel.

Still, there are a lot of clam shacks signing up for Green Mountain's hauling services, just as more people are signing up for biodiesel fuel deliveries, Proulx said.

One popular restaurant taking advantage of Green Mountain's hauling service is Michael's Harborside in Newburyport, which used to pay \$50 to \$60 per month to have its used oil disposed of.

"I would say the supply has gone up along with the demand," Proulx said. "More and more restaurants are calling about our service, and when they are calling us, that is a good thing."