

Powered by cooking oil: Ashfield man invents a better burner



By [DIANE BRONCACCIO](#)

Recorder Staff

ASHFIELD — After 14 years of research, Thomas Leue created and patented an oil burner that runs on unfiltered, used cooking oil and has about 98 percent less climate impact than burners using conventional heating oil, he says.

And now the U.S. Environmental Protection Agency has notified Leue that the food-waste oil used to power the Yellow Heat oil burner could also generate green credits for every gallon of waste vegetable oil burned.

“This solves three of the largest problems of standard oil heating systems: the expense, the clean-up problems associated with oil leaks, and that (regular heating fuel) is not great for the environment,” said Leue.

Doing business as Homestead Engineering Inc., Leue is a Title 5 systems inspector and an oil burner technician.

In 1999, Leue started producing biodiesel fuel, collecting used vegetable oil from restaurants and refining it with such chemicals as methanol and household lye.

“I did sell it, packaged in five-gallon jugs,” he said. Leue still has a 1,500 gallon tank that’s about half-full of biodiesel. But once Leue sells off the 800 or so gallons left in the tank, “I’m out of the biodiesel business,” he said.

For more than a dozen years, Leue has been working on what he calls “Yellow Heat,” based on using “yellow grease” — used vegetable oil collected from restaurants and other sources and strained through a wire mesh. He said water and particulates are removed, but it doesn’t require flammable chemicals for refining. In fact, the “burnt, crunchy bits” of food from the used grease can be filtered out with a screen and the oil used as is.

Such unrefined, used cooking grease can clog most burner heads, but Leue has designed a Babington Ball burner head that can be connected to any burner unit. The burner head is a golf-ball sized steel sphere with a tiny hole in the center that emits a high-pressure air jet. The oil runs over the surface of the sphere and the compressed air atomizes the oil, which is ignited by electrodes.

Leue says the burner system is safer than conventional heating fuel and it emits 98 percent less carbon than conventional systems. His oil burners come with a two-year warranty. Solids are screened out of the oil, and any oil drips not atomized on the burner go back into the tank, cleaner than before.

Leue says the waste oil used in his system is food-grade and inherently non-toxic, so if there’s a spill, it’s not hazardous waste. While regular heating oil costs about \$2.40 per gallon, used vegetable oil from restaurants can be much cheaper — or even free.

The letter sent to Leue from Karl Simon, director of the Transportation and Climate Division of the US Environmental Protection Agency, says the yellow grease used as heating oil in the Yellow Heat burner can qualify for Renewable Fuel Standard credits, which are tracked through RINs or Renewable Identification Numbers. According to the EPA, Yellow Heat burner technology could reap about \$1.70 per gallon in renewable fuel credits.

Leue’s burners will meter grease oil use, and he plans to share the energy credit revenue, giving customers 50 cents for every gallon of yellow fuel burned.

Leue said the Yellow Heat burners cannot yet be used on home heating systems because all home burners must be approved by UL (Underwriters Laboratories), a 120-year-old, international company that performs product safety tests. At this

point, he said, waste oil is not allowed by UL for use in home heating systems. However, Leue is seeking approval of the new burner through the Canadian Standards Association, a similar organization that sets product safety standards. Leue estimates that approval process should take another year.

For now, the Yellow Heat burners are approved for use in commercial settings — shops, warehouses, greenhouses, garages and for farm buildings. Leue said the Yellow Heat burners can also use conventional oil, but he is hoping people will burn the used oil to cut down on fossil fuel use.

Leue said many restaurants are happy to get rid of used cooking oil. He says the United States exports about 100 million gallons of waste oil a year — oil that could be used in his burners, he said.

When asked if he will sell the “yellow oil,” Leue said, “there are separate companies that provide that. It’s a new business for some of those pending companies.” Leue said he has been in talks with Eduardo Suarez, executive director of Echo for Sustainable Development, which has up a “yellow grease” plant in Holyoke. That product goes to biodiesel makers, but it could also be used in Leue’s burners. Leue said Suarez has agreed to offer delivery service to those who purchase the Yellow Heat burners.

Leue sells the Yellow Heat burners for about \$2,500. More information is available on Leue’s website: www.yellowheat.com.

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