

Biofuel production rises

By PETER GUINTA
peter.guinta@staugustine.com
Publication Date: [03/11/08](#)



R.J. Inman, St. Johns County's one-man biofuel division, said Monday that his mostly homemade lab is ready to ramp up biodiesel production to 60,000 gallons per year.

This could cut county diesel fuel costs by \$120,000.

Inman said the diesel fleet of 200 vehicles burns 26,000 gallons of petroleum-based fuel per month.

"The more biofuel I can make, the more money we save the county," he said.

Diesel oil costs are hovering at \$3.30 to \$3.40 per gallon, and biofuel costs \$1 to \$1.50 to make. But the more gallons made, the lower the cost per gallon.

Public Works Director Joe Stephenson, who oversees both the fleet and biofuel division among other departments, has made small amounts of biofuel at the Road & Bridge compound on State Road 16 for years. About three years ago, that closet-sized lab was featured in articles all over Florida and elsewhere for being one of the first governmental biofuel-making facilities.

But Stephenson thought he could go bigger.

Using spare, recycled or discarded parts and old liquefied petroleum gas storage tanks, Stephenson, Inman and Fleet Maintenance Manager Michael Grace built a clean and functioning biofuel facility in a back corner of the compound.

Some local restaurants that fry foods in vegetable oil have decided to donate their used oil. Otherwise, they'd have to pay a waste company for its disposal.

A county truck stops at the large black jugs behind the restaurants, pumps the discarded oil into its large plastic tank and brings it to the lab.

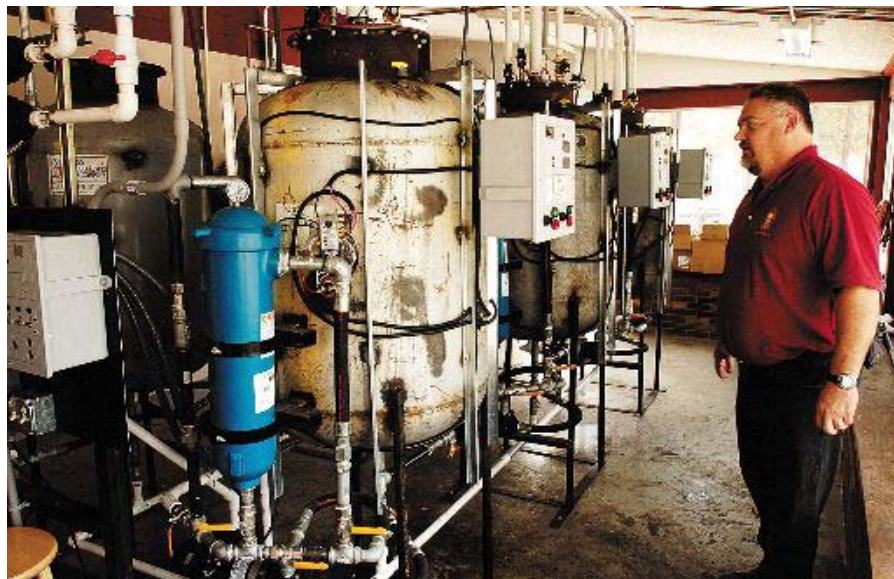
"The basic process of making biofuel is basically pretty simple," Stephenson said. "Most is made from clean virgin oil, rapeseed oil, soybean oil or cottonseed oil. But it's a bit more challenging with used vegetable oil."

Suspended solids, mostly food particles, need to be filtered out, Cooking the oil makes it too "base," or alkaline. Acid, in the form of methoxide and lye, must be added. Water must be removed, then injected into the mix to wash it, then removed again using vacuum boilers.

Finally, the oil looks like light honey but it still needs to be put in an 8,000 rpm centrifuge to remove even the tiniest particles.

"Then we finally have biodiesel," Stephenson said.

County Administrator Michael Wanchick said, "I'm extremely pleased with the staff's initiative and progress with this biodiesel innovation. The development of a biodiesel fuel program couldn't come at a better time for the county as fuel costs continue to escalate and we face the challenge of significantly reducing our budget."



The fuel produced at the newly grown facility is so clean that any remaining particles are insignificantly small not any bigger than a red blood cell.

Stephenson said a national testing group is evaluating the fuel right now. It must qualify and be certified.

"The fuel will go into millions of dollars of publicly owned equipment," he said, adding that a frozen engine of an ambulance or fire truck could result in a tragedy.

When standards testing is done, the biofuel is mixed in a ratio of 20 percent biodiesel and 80 percent petroleum diesel. The resulting fuel is called B20 because of that ratio.

Fleet Maintenance Supervisor Mike Grace said, "Each truck engine manufacturer sets the level of biofuel that will work in their trucks to be covered under warranty."

Inman, a former fire chief for the Florida Army National Guard, said the fuel he makes is biodegradable and non-toxic in the air.

"I take the quality of our fuel personally," he said.