

**U-NEWS** REPORTED AND EDITED BY STUDENTS AT THE UNIVERSITY OF CENTRAL FLORIDA.

# Senior biodiesel project to save UCF cash

The goal of 5 mechanical engineering students was originally to improve gas mileage in 4 of their cars.

By STEVE MULLIS  
SPECIAL TO THE SENTINEL

Gas prices may be on the rise, but five senior mechanical engineering students at the University of Central Florida aren't worried.

For their senior design project, the students are building a biodiesel processor, a device that converts plant-based oils into biodiesel fuel. UCF's Physical Plant will use the device to save thousands of dollars a year in fuel costs.

"Essentially, we just wanted to lower fuel costs for ourselves," said Michael Schulist, a student working on the project. "We managed to do this quite well and decided to take it further."

In order to show an understanding of engineering concepts, mechanical engineering students are required to take on a yearlong design project during their final two courses, according to the UCF undergraduate catalog.

Four of the five students drive diesel vehicles that they run on homemade biodiesel.

"I've been running biodiesel in my engine for quite a while," said Chad Heinrich. "My car has paid for itself almost twice over with the money I am saving on gas."

In trial experiments with prototypes, the students produced hundreds of gallons of usable biodiesel fuel. The students estimated the cost for the gas they made for themselves was about 80 cents a gallon, Eric Williams said.

Schulist said the process to make fuel that is vegetable oil-based instead of petroleum-based is simple, using a combination of chemistry and mechanical processes.

"The chemistry of [biodiesel] is already well-known," said Ali Gordon, an assistant professor of mechanical engineering who is advising the students. Gordon said the students are focused more on automating and streamlining the process.

Biodiesel can be used in diesel engines with little or no modifications to the engine. The benefits are not only economic but also environmental, Schulist said.



PHOTOS BY SARAH ROGERS/SPECIAL TO THE SENTINEL

UCF mechanical engineering senior Jaimeson Jeffery holds up a jar of biodiesel fuel made in the processor from cooking oils. Five students built the processor.

"The biggest environmental benefit is that it burns in a closed carbon cycle," Schulist said. This means that any carbon released from the burning of the fuel is balanced by the carbon absorbed when the plants used to make the oil grew, Schulist said.

"The worst thing that can happen is that your fuel filter will get clogged up," said Eric Williams, another student working on the project. "This is nothing regular vehicle maintenance

wouldn't fix."

In order to get funding, the group agreed to build the processor for UCF's Center for Energy and Sustainability, a division of the Physical Plant, to use in its alternative-fuel-vehicles program.

David Norvell, energy manager for UCF's Center for Energy and Sustainability, said that the goal is to produce 5,000 gallons a year using the system. Schulist said the processor should



UCF mechanical engineering students Eric Williams (from left), Michael Schulist, Jaimeson Jeffery and Chad Heinrich stand with the biodiesel processor they built.



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— CHAD HEINRICH  
UCF STUDENT WORKING ON PROJECT

be ready by the time they graduate in May.

The students estimate the biodiesel processor could save the Physical Plant a couple of thousand dollars a year.

If used at maximum capacity, the processor could save even more but would wear out faster, Schulist said.

"That savings could be passed on to the university, which is one of the motivations of the project," Gordon said.

Biodiesel isn't without its critics, however.

"One problem is that you have to use cropland that people might need for food in order to make the fuel," said mechanical engineering major Jaimeson Jeffery.

Two recent papers published in *Science*, a leading scientific research journal, stated this reason for why biofuels are just as bad, if not worse,

than fossil fuels.

"That's not argument enough not to explore [biofuels]," Gordon said. "If good things come of it, then that gives us more ammunition to move forward."

One solution to the criticism is the creation of biodiesel from other biomass, such as algae.

"In comparison, you can make about 13,000 gallons per acre of algae as opposed to 200 gallons per acre of canola," Schulist said.

A company called PetroAlgae in Melbourne is commercializing this technology. Schulist said he and his colleagues are trying to get jobs at PetroAlgae after graduation.

"I would love to turn this research into a career," Schulist said. "I think people will be more accepting and open to the idea of biofuels once gas prices begin to top \$4 a gallon."

## GOVERNMENT WATCH

From page H1

### Ocoee Grants for civic, nonprofit groups

Applications for the City of Ocoee Quarterly Committee Program will be available Monday. The deadline to submit applications is April 4.

The program provides grants up to \$500 to Ocoee

nonprofit organizations and civic groups.

Applications will be available on the city's Web site at ci.ocoee.fl.us or at the City Hall reception desk. Completed applications should be mailed or delivered to City Hall, Community Relations, 150 N. Lakeshore Drive, Ocoee, FL 34761. The applications are ranked by the Community Grant Review Board, a group of residents appointed by the Ocoee City Commis-

sion. The City Commission then makes the final decision.

### COUNTYWIDE Judge OKs panel subpoena power

Orange County's Citizen Review Board won a decisive legal battle this week in its 2½-year fight to assert that it has the right to subpoena deputies.

The fight began in May 2005, when the nine-member citizens panel subpoenaed a deputy and the deputy refused, with the backing of Sheriff Kevin Beary and the Police Benevolent Association labor union.

The citizens panel is charged with reviewing allegations of excessive force or abuse of power by deputies and with advising the sheriff. Its powers are spelled out in the Orange County charter, in-

cluding the power to subpoena. But deputies contend that state laws and the police officer's bill of rights trump the charter.

This week Orange County Circuit Judge Maura T. Smith ruled that the panel's subpoena powers and the police officer's bill of rights can coexist and that the panel can force deputies to appear before it.

Gabrielle Finley and Rich McKay of the Sentinel staff contributed to this report.

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