

Dining hall grease powers campus lawnmower

By Christine Lena

Filtered fryer oil from one of Western Michigan University's dining halls is being used as an alternative fuel source to power a converted campus lawnmower.

The smell of cafeteria food fills the air as cooks flip sizzling hot burgers and pour fresh French fries out of the fryers and into baskets for Western Michigan University students.

The fryer oil cooking those burgers and fries, which is no longer usable for cooking, is collected in the kitchen of the Hoekje/Bigelow Dining Hall, said Paul Choker, the chef and assistant director of WMU dining services.

The oil used in WMU's dining halls is a 100 percent soybean oil called "Zoye" and is produced by Zeeland Food Services, Choker said. After it is used it is considered waste vegetable oil and is transported to the grease storage tank located in the Bernhard Center, Choker said. He said this tank holds 250 to 300 gallons of waste oil. Here the oil is filtered twice to be used as alternative fuel for a converted WMU Landscape Services lawnmower.

The oil is filtered in a 24-hour period using different filtering cloths to strain out all the matter that's hazardous for the mower, said Steve Keto, the natural areas and preserves manager for Landscape Services at WMU. The filtration process is called a gravity filter system.

After being filtered, the oil is transported from the Bernhard Center loading dock using an oil shuttle and then transferred to a 350-gallon holding tank until it's needed by WMU's Landscape Services, Choker said.

Landscape Services staff fill two and a half-gallon containers to transfer the oil where the staff needs it for the mower, which is usually the Campus Services building where many of these oil drum containers are kept, Choker said.

"We average approximately 250 gallons of oil per season for the converted mower," Choker said.

According to [*Waste Vegetable Oil from Dining Services to Campus Lawnmowers*](#), a student report from Harold Glasser's ENV5 4100: Appropriate Technology and Sustainability class: "The filtered oil is not combustible by itself, so a startup process is needed to get the vehicle going. To do this, a smaller, 3-5 gallon tank is filled with petro-diesel fuel, while filling the main tank with the filtered vegetable oil."

To transfer the waste vegetable oil into the mower's converted engine, the operator flips a switch after the few minutes it takes to warm the engine and oil, Keto said. After that, the mower "is ready to go mow the campus lawns," Keto said.

"The lawn mowing season runs from April or early May to September," Keto said. "From our end we collect the filtered oil during the summer for our mower and it works great."

The initiative began as "a class project where students Camilla Voelker and Bryan Madle were supported by the Office for Sustainability Student Grant in 2012," said Derek Kanwischer, coordinator of sustainability projects at WMU's Office for Sustainability. Other students collaborated on the project as well.

As projected by the students who organized this initiative, the use of the one converted mower yields \$6,680 annual savings in fuel costs, according to the student report. Back in 2012 when the program took off, it was projected to take a little over two years for the return on the initial investment.

"The environmental gains from this increased use of alternative fuel source is exciting because of the direct environmental impact and the way that WMU can be demonstrating to others that it's possible, in many cases, to use alternatives to petroleum diesel," Kanwischer said.

Currently, Choker isn't aware of any plans to convert additional mowers or of any other pilot programs.

“At this point the Valley Dining Center opening fall of 2016 will also have a holding tank installed,” Choker said. “This will increase the amount of filtered oil available to support additional opportunities.”

This project is a joint collaboration with the Office for Sustainability, Landscape Services, Maintenance, Dining Services and Environmental Health and Safety at WMU, Keto said.