UR Biodiesel

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Proposal Overview

- SAVE UNIVERSITY MONEY
- BENEFIT THE ENVIRONMENT
- ATTRACT PUBLICITY TO UNIVERSITY
- IMPLEMENTATION AND SAVINGS WITHIN FIRST YEAR

WVO From UR Dining = Fuel for UR Vehicles

How it Works: Making Biodiesel

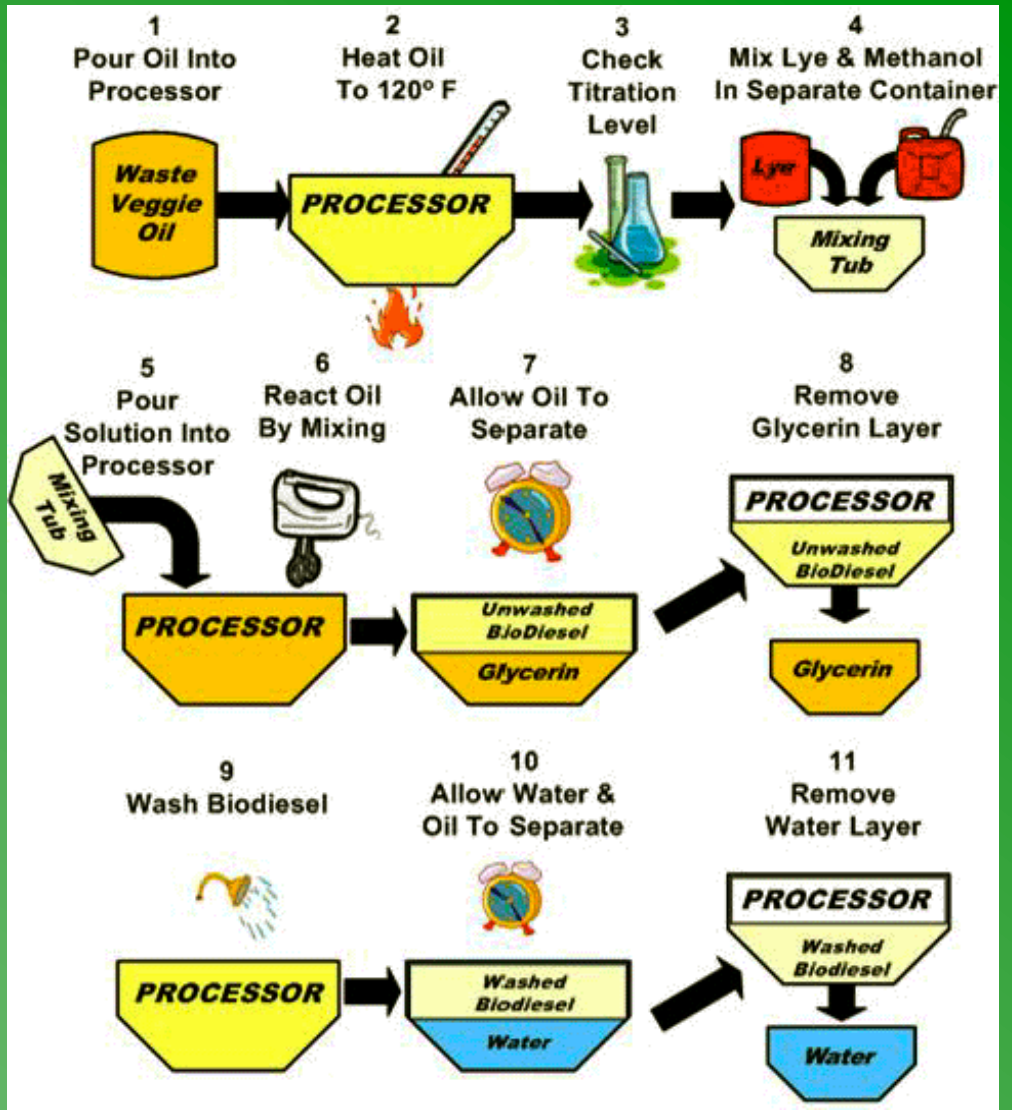
Transesterification

Reactants:

- Lye (NaOH)
- Methanol(CH_3OH)
- WVO

Products:

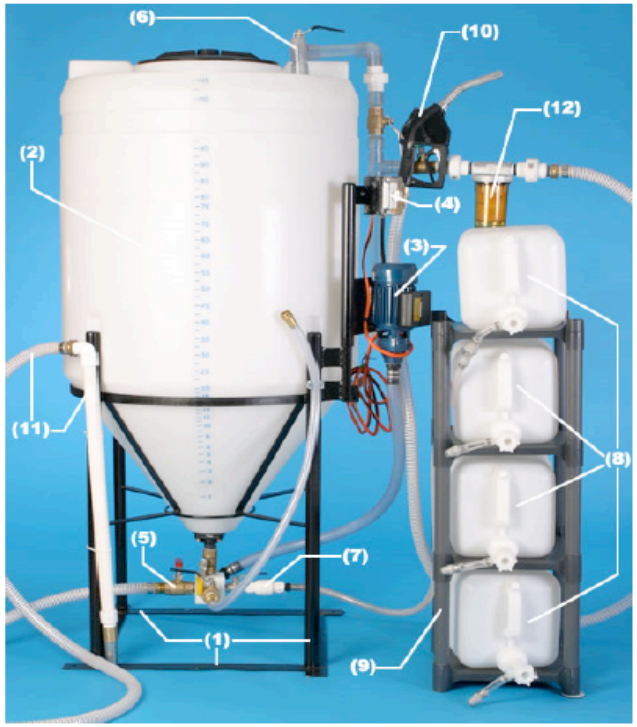
- Biodiesel
- Glycerin



Processor Selection

Table 1: Biodiesel Processor Comparison Chart

Processor Model	Biodiesel Solutions Fuelmeister II	Home Biodiesel Processor	Home Biodiesel Kits Freedom Fueler
Biodiesel Output (gal/ batch)	40 gallons	80 gallons	40 gallons
Batch Processing Time	12 hours (not including wash time)	24 hours (including wash time)	18 hours (including wash time)
Operator Time	30 minutes	30 minutes	30 minutes
Price with Shipping	$4,245	$2,995	$4,190

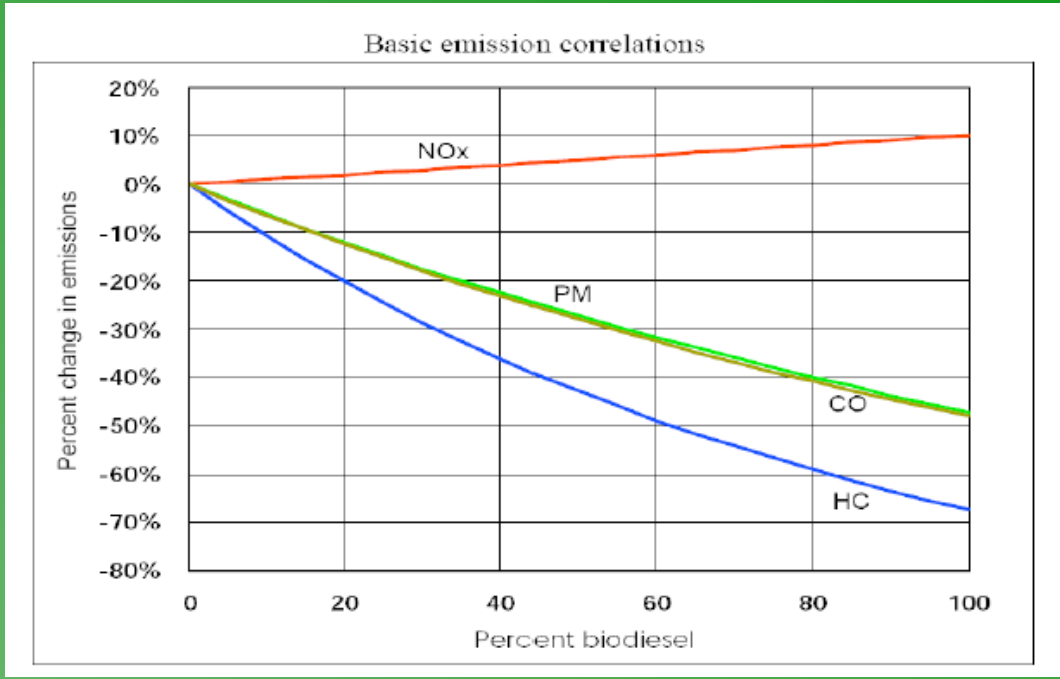


Home Biodiesel Processor (http://www.homebiodiesel.com).

(1)metal frame
(2)polyethylene reaction tank
(3)electric pump
(4)pump control panel
(5)valve block
(6) turn ball valves, 7 total
(7)check valve
(8)methanol carboys with quick disconnects
(9)shelving unit for carboys
(10)auto shutoff dispensing nozzle & hose
(11)suction nozzle & hose
(12)fuel & pre-water filter

Petrodiesel vs. Biodiesel

- Emissions: Lower for biodiesel

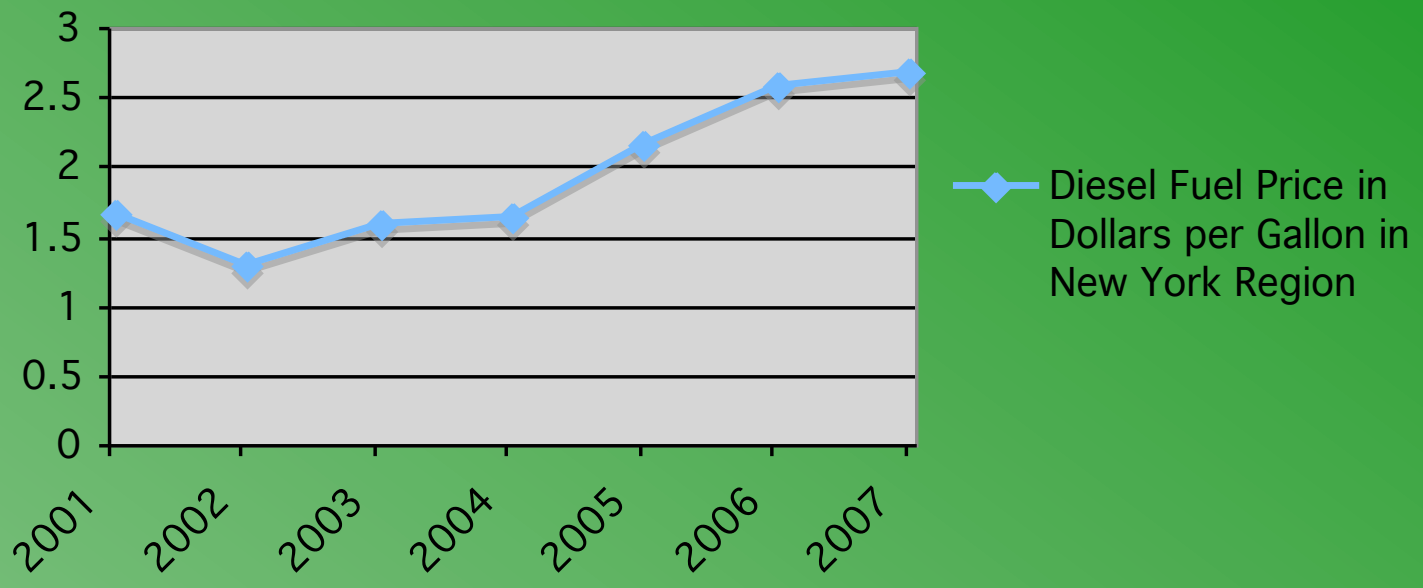


- Performance: Comparable

- Toxicity: Biodiesel is much safer

University Diesel Usage

April 2006	May 2006	June 2006	July 2006	August 2006	September 2006	
1,275	1,017	1,186	1,240	1,137	1,271	
$3.00/gal	$3.12 /gal	$3.04 /gal	$3.07/gal	$3.00/gal	$3.04 /gal	
$3,825	$3,173	$3,685	$3,807	$3,411	$3,864	
October 2006	**November 2006**	**December 2006**	**January 2007**	**February 2007**	**March 2007**	**Total**
1,159	986	830	1,186	2,781	1,435	**15,411 gals**
$2.57	$2.64	$2.77	$2.58	$2.63	$2.78	**Avg.= $2.8**
$2,979	$2,603	$2,299	$3,060	$7,314	$3,989	**$44,009**



University Waste Vegetable Oil Use and Costs for Disposal

Source of WVO	Pounds of WVO	Gallons of WVO	Cost of Disposal
River Campus (Douglass and Danforth Docks)	8,500 pounds per year	1,260 gallons per year 105 gallons per month	$220 per month
Eastman Campus Dock	1,500 pounds per year	240 gallons per year 20 gallons per month	$100 per month
Strong Memorial Hospital Docks	10,000 pounds per year	1,500 gallons per year 125 gallons per month	$54 per month
Total	20,000 pounds per year	**3,000 gallons per year**	**$374 / month** **$4,488 per year**

Total Cost of WVO Disposal and Purchase of Diesel Fuel = **$48,497**

Expenses of UR Biodiesel

Purchase of Processor	**Purchase of Storage Drums** (based on estimated cost of $50 per 55-gallon drum, 10 drums)	**Total Up-Front Costs**
$3,000	$500	**$3,500**

Cost of Operation (employee salary)	**Cost of Fuel Additives**	**Transportation of WVO**	**Removal of Glycerin**	**Total Long-Term/ Continuing Costs**
$240/month $2,880/year	$145/month $1,740/year	$200/month $2,400/year	$550/year	**$7,570 / year**

Short-Term Balance Sheet

Year	Start-Up Costs	Yearly Variable Costs	Gallons of Diesel Being Displaced by Biodiesel (gal)	Amount Saved from Eliminated Cost of Diesel	Amount Saved on WVO Disposal	Net Savings to University
2008	$3,500	$7,570	2,700	$7,688	$4,488	**$1,106**
2009	$0	$7,570	2,700	$7,911	$4,488	**$4,829**
2010	$0	$7,570	2,700	$8,154	$4,488	**$5,072**

Growth Potential

Potential Future Sources of WVO	Estimated Monthly Supply of WVO
Pelligrino's/The Distillery	200 gallons / mon th
Wendy's Restaurant	250 gallons / month
Yummy Garden Chinese Food	300 gallons / month
University of Rochester	250 gallons / month (3,000 gallons/year)
Total	**1,000 gallons/month (12,000 gallons/year)**

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2010	$0	$7,570	2,700	$8,154	$4,488	$5,072
2011	$1,000	$17,422	10,800	$33,480	$4,488	**$19,546**
2012	$0	$17,422	10,800	$34,484	$4,488	**$21,550**
2013	$0	$17,422	10,800	$35,519	$4,488	**$22,585**

Other Benefits

- Promote “Green” Image of University
- Student Employment
- On-Campus Internship Opportunities
- Engineering and Science Department Resource
- Promote Local Business

Competition and Competitive Advantage

- Baker Commodities
- Gibbs Marine Group

Implementation Plan

- Funding : Sponsorship by student groups and departments
- Organization : Blending etc.
- Student group support and green campus initiatives
- Regulations : Storage

Timeline

- Summer 2007: Coordination with new bus system
- September 2007: Purchase of processor and other equipment
- October 2007: Begin pickup of waste vegetable oil from dining facilities
- November 2007: Advertisement of biodiesel use to promote sustainability and create UR publicity
- January 2009: Expansion of the project to pickup waste vegetable oil from off campus sources

Summary

UR Biodiesel will:

- Generate $24,000 yearly
- Lessen University Carbon Footprint
- Create Green Image for UR
- Promote Sustainable Energy