

The Great American Veggie Van Adventure



Josh and Kaia Tickell

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Powered by vegetable oil, the Veggie Van took us 10,000 miles across the United States. The van visited 20 major cities and 25 states where people smelled the clean, french fry-like exhaust. Over 40 million people saw the multicolored Veggie Van drive across their television screens. Thousands attended presentations about the van, and hundreds of thousands more read about the van in their local newspapers. More than half a million people visited the Veggie Van website.

What began as a college project culminated during the summer of 1997 in a massive public awareness campaign. We knew that we had reached people from almost every walk of life when a person begging on the street shouted to us, "Hey, isn't that the van that runs on that used restaurant oil?" We nodded in response and as we drove away the man shouted, "That's incredible, good luck!"

Fields of Fuel in Germany

Luck had once taken us to a traditional farm in picturesque southern Germany where we had seen vehicles fueled by vegetable oil. While studying organic agriculture and living on this farm, we noticed that the farmers were continuously hauling tanks full of yellow liquid. The farmers told us, "This is fuel from the canola plants which grow on our farm and on Jorg's farm up the road. We put it in the diesels and they smell good." To our amazement, the farmers poured the yellow liquid

into their car and tractor, which then emitted a pleasant smelling exhaust.

What You Didn't Know About the Diesel Engine

More than 100 years ago, a brilliant inventor named Rudolph Diesel designed the original diesel engine to run on vegetable oil. Over time, the diesel engine was modified to run on a cheap, dirty by-product of gasoline production, labeled "diesel fuel." Straight vegetable oil is too thick to run in most modern diesel engines, but biodiesel, a biodegradable, non-toxic fuel made from vegetable oil, works in any unmodified diesel engine. Not only does biodiesel require zero modifications to the engine, but this fuel works either by itself or blended with petroleum diesel! The process of converting vegetable oil into biodiesel fuel is called transesterification and is far less complex than it sounds. In fact, the process is so simple that it can be done in a blender!

A Simple Reaction

The chemicals needed to make biodiesel are cheap and easy to find. Any vegetable oil (such as used restaurant cooking oil), methanol (a clear alcohol used as racing fuel), and lye (a white powdery substance used as drain cleaner) are the basic components. During the conversion process, the ingredients are heated and mixed, and biodiesel and glycerin are created. The glycerin can be used to make soap or any one of thousands of other products. Biodiesel fuel can be used directly in an unmodified diesel engine and it can burn up to 75% cleaner than petroleum diesel fuel. Since biodiesel can be made from used cooking oil, we decided that it was time for us to take this idea on the road.

How it All Began

Enamored with the idea of transforming the fast food restaurant fryers of America into a network of low-cost gas stations, we decided to build a portable fuel processor, buy a motor home with a diesel engine, and travel across the country. Sitting on a local used car lot was a 1986 Winnebago LeSharo with a 2.1 liter Renault diesel engine that would soon become the "Veggie Van." The small, white van had the perfect engine and it got 25 miles to the gallon. Two purple, gleaming photovoltaic panels soon adorned its roof line. The panels allowed us to stay "off the grid" because they powered the van's refrigerator, lights, computer, power



Above: The Veggie Van with the Green Grease Machine in tow.

tools, and video equipment. Fueled by soft drinks and pizza, a rag-tag group of volunteer art students painted sunflowers and earth symbols on the van. The Van Gogh-esque graphics and some well placed lettering told any onlooker that this Veggie Van was "Powered by Vegetable Oil," got "1,300 Miles Per Acre" and was on the "Veggie Van USA Tour." The exterior of the van hinted of the mechanical magic occurring inside the engine, which remained totally unmodified.

The Green Grease Machine

The "Green Grease Machine" was created when we mixed salvaged parts from scrap yards, boat marinas, and hardware store plumbing supplies with our blood, sweat, and used cooking oil. This trailer-mounted work of art makes clean burning biodiesel out of used restaurant vegetable oil. First, an old Champion juicer motor sucks vegetable oil from a restaurant fryer, then a converted tug boat fuel filter strains the french fries and other bits of food out of the oil, and lastly the oil moves into a converted 1976 military steam kettle where an outboard boat motor swirls the ingredients together!

The First Time We Turned it On

Some very interesting experiments with vegetable oil and fryer grease gave way to our first large batch of biodiesel fuel. Covered in grease, we watched as the dark fuel was poured into a secondary tank of our test vehicle, a diesel VW. As soon as the tank's valve was opened, the fuel began to gurgle, the engine changed pitch, and the air was filled with the odor of super-fried vegetable oil. Our experimental fuel

Below: The Green Grease Machine performs transesterification.





Left: A fuel filter, salvaged from a tug boat, gets the bits of french fries out of the cooking oil.

actually worked! For months, we experimented with various blends of vegetable oil as fuel, succeeding to run our VW Jetta on up to 80% straight fryer grease for over 5,000 miles.

Life On the Road

Phone calls and e-mails poured in from around the country as we planned the 1997 Veggie Van USA Tour. We talked to reporters, environmental organizations, music festival managers, and school teachers as we scheduled tour events and planned our route. The trip itinerary filled quickly. We had the Veggie Van, the Green Grease Machine, and an almost endless supply of grease. Thus began the 1997 Veggie Van USA Tour.

We ran the Veggie Van on 100% biodiesel fuel for 10,000 miles from coast to coast. The Veggie Van towed the Green Grease Machine in a trailer and together they weighed almost 5 tons! The biodiesel fuel gave at least a 10% power gain over petroleum diesel and we felt every bit of it on the mountains.

Life on the American road in the Veggie Van was a non-stop, colorful adventure. At least one out of every four people who passed us on the highway waved, honked, or gave us a big smile. We often turned our heads to absentmindedly look at a passing vehicle only to see a camera flash from the passenger's side. In rest areas and parking lots, people gathered around the van, reading its messages, taking pictures of family members next to it, and including it in their summer vacation home movies. The first question people asked

us was, "Does it really run on vegetable oil?" One whiff of the exhaust was enough to convince most skeptics. Believe it or not, it does smell like french fries.

That summer, we talked with farmers who want to run their equipment on oil from the crops that they grow. We found that urban dwellers want public transport without the asphyxiating pollution. We met with CEOs, environmental organizations, and people of all ages and backgrounds. We talked to "snowbirds" in campgrounds, truckers in truck stops, and young men in fast red cars in traffic jams. We talked to students of all ages who want to study clean technologies. We talked a little and we listened a lot. We heard the voices of a proud, caring people who still love their country, their land, and their air. They want to use clean fuels in their cars and renewable energies in their homes.

The Public Responds

When the 1997 Veggie Van USA Tour officially ended in Hopland, California, the Veggie Van had been on the Today Show, Dateline NBC, Nightshift, and many other news broadcasts across the country. The Associated Press circulated an article about the Veggie Van to hundreds of newspapers around the country. Wherever we arrived people said they just read about us in the paper. The Veggie Van website logged over half a million hits that summer and continues to receive hundreds of visits a day. The website was featured in Yahoo's weekly picks and in Internet Life Magazine.

Power to the People

The 1997 Veggie Van USA Tour gave us proof that there are better ways to run cars and ultimately better ways to run our society. Every time we turned grease

Below: The "Main Reactor" of the Green Grease Machine is a converted military steam kettle.

Also shown, the Yanmar Diesel generator which runs on biodiesel to power the Green Grease Machine.



into clean fuel, we proved that we can create clean energy resources using our current technology. Our goal is empowerment of ourselves and others through education and information. We wrote the book, *From the Fryer to the Fuel Tank: How to Make Cheap, Clean Fuel from Free Vegetable Oil*, in response to the hundreds of e-mails, letters, and phone calls we received requesting more information about the amazing fuel made from fryer grease. This first book about biodiesel available to the general public gives simple, easy-to-follow instructions for making fuel from vegetable oil. Everyone aged six to one hundred and six will find this book a humorous and insightful look into vegetable oil power, renewable energy, and how to make cheap, clean fuel from free fryer grease.

The Veggie Van Rides Again!

The Veggie Van is currently voyaging to schools to show young people that renewable energy such as biodiesel fuel and solar power are easy to use and good for the environment. The response from kids of all ages has been a big "thumbs-up" for the plant-powered vehicle.

Meanwhile, preparations for this year's "Veggie Van Grease'n'Go USA Tour" are underway. Starting in June, the fryer grease hits the Veggie Van fuel tank and the tires hit the road in another exciting cross-country adventure. This year's USA Tour goals are to have fun, make tons of fryer fuel, and show up in unexpected locations to talk to people about renewable energy. (Did we mention that the Veggie Van could show up in your home town?—send us an e-mail telling us where you are and why we should come there!)

The only part of the itinerary we are disclosing is that the Veggie Van will visit the Solar Living Center for their 1998 SolFest celebration on June 20 and 21. While the Veggie Van makes its way through the highways, bi-ways, and fast-food restaurants of America this



Above: Authors Joshua and Kaia Tickell display samples of their homemade biodiesel.

summer, the cyber-tour will be occurring online at www.veggievan.org. Events will be announced a few days ahead of time (so you have time to tell your friends that the Veggie Van is coming to your town). You can follow the adventures, trials, and tribulations of the Veggie Van by watching the site for our daily digital updates. The Cyber-Grease'n'Go Tour will feature stories, press, and, of course, pictures of the clean-burning odyssey as it unfolds.

Access

Authors: Josh and Kaia Tickell are available to visit schools and events with the Veggie Van. c/o GreenTeach, 15 Paradise Plaza, Suite 311, Sarasota, FL 34239 • Fax: 813-354-2377 • E-Mail: van@veggievan.org • Web: www.veggievan.org

From the Fryer to the Fuel Tank is available through the web site or by calling 800-266-5564



Below: A converted Champion juicer motor serves as the main pump for the system.



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