

Biodiesel Case Studies

Alternate Fuel Task Group

Florida Department of Transportation

What types of vehicles are you using biodiesel in?

We have been using 20% Biodiesel at our Deland facility for the past five years on any piece of equipment that uses diesel. This includes everything from light duty trucks to off road equipment such as road graders, excavators, farm tractors, etc. Our diesel equipment ranges in age from 1987 to 2006.

How much biodiesel do you use?

We have averaged about 25,000 gallons per year for the last four years.

What kind of effects has the biodiesel had on your equipment?

We only had to change some filters, out of our regularly scheduled preventative maintenance program, at the beginning of our decision to start using biodiesel.

How do the users of the equipment feel about using biodiesel?

Most of them don't even know they are using it.

When deciding to use biodiesel, what types of challenges did you have to overcome in your organization?

We did not have to overcome any internal barriers because under the Energy Policy Act of 1992, the Department could obtain 50% of it's credits by using biodiesel. This was a lot cheaper than paying \$5,000 more for each bi-fuel CNG car or truck.

Greater Orlando Aviation Authority

What types of vehicles are you using biodiesel in?

Transit buses and heavy construction gear

How much biodiesel do you use?

We have a 10,000 gal. tank in which we keep diesel. We buy fuel on the spot market, and bio has only come in low bid a few times since 1 Oct. and we splash blend it into the existing tank. As a result, we get about a 7000 gal. delivery of B20 and mix it into the tank; so far this year we have used about 21,000 gal. of B20.

What kind of effects has the biodiesel had on your equipment?

No noticeable impact.

How do the users of the equipment feel about using biodiesel?

Largely unaware.

When deciding to use biodiesel, what types of challenges did you have to overcome in your organization?

None, other than cost. We buy lowest cost alternative, and bio doesn't often win that fight.

Orange County, FL

What types of vehicles are you using biodiesel in?

Currently some off road equipment operated by Public Works, although the Head Start School buses are fueling on B20 as well.

How much biodiesel do you use?

Currently we have one 15,000 gallon B20 tank at our Public Works facility, which is filled ~ every other month. We began dispensing fuel in March 2006 and expect to use about 90,000 gallons / year. We are planning to install an E85 tank at our main fueling station by the end of 2006.

What kind of effects has the biodiesel had on your equipment?

To date we have experienced no negative effects from using B20.

When deciding to use biodiesel, what types of challenges did you have to overcome in your organization?

Some challenges were: Fuel costs (as the price fluctuates with the futures market) - typically running higher than diesel. Supply availability was an issue at first, as not many distributors were available in this area. Often transportation costs inflate the price of the fuel - World Energy currently supplies our Biodiesel Fuel out of Tampa / Lakeland). Orange County is looking to purchase E85 from Jacksonville once our infrastructure is established. Containment of the product has been an issue (the B20 tank undergoes frequent filter maintenance, vehicles using the product undergo increased monitoring of their fuel filters).

Seminole County Public Schools

What types of vehicles are you using biodiesel in?

We are using the biodiesel in every diesel vehicle that Seminole County Schools owns. 459 school buses and about 30 support vehicles.

How much biodiesel do you use?

We use about 1.3 millions of fuel a year. We are going to continue using biodiesel as long as the price is equal or close to diesel.

What kind of effects has the biodiesel had on your equipment?

We have only had four deliveries of biodiesel so far, we haven't been using it long enough to have any problems.

How do the users of the equipment feel about using biodiesel?

Most of our users don't know what kind of fuel they are getting. They just fill their vehicle and go on.

When deciding to use biodiesel, what types of challenges did you have to overcome in your organization?

When we went to biodiesel the only thing we had to overcome was purchasing issues. We had to get copies of Manatee county bid and present it to our Purchasing Dept. Purchasing had to get approval from the School Board to purchase the fuel. We seem to have plenty of support.

St. Johns County, FL

What types of vehicles are you using biodiesel in?

We use Biodiesel in just about everything you can imagine... If it has a diesel engine, we use it. For instance, dump trucks, road graders, large pumps, pickup trucks, Jeep Liberty SUV's with the new diesel engines, bulldozers, tractor trailers. buses, generators, etc.

How much biodiesel do you use?

Our goal is to make 60,000 this year.

What kind of effects has the biodiesel had on your equipment?

We had no negative effects whatsoever. The only issue we had was that some of the equipment (mostly the old stuff) had intermittent problems with clogged fuel filters but I soon realized that it was just the biodiesel cleaning out the microbial growth in the fuel tank that the petrodiesel had left behind. Once I found the problem I simply had the fuel filters changed more often until all the growth was out of the fuel tanks and then we went back to regular change intervals. Supposedly (according to the government experts) there is about a 5% or so power loss, but we never had any complaints from the drivers about that. Some of the drivers actually said that they felt like their trucks had more power instead of less. And, they loved the fact that there was no more black smoke or bad odors associated with their exhausts.

How do the users of the equipment feel about using biodiesel?

Well, I'm sure that our users would have hated it had they known that they were using it. You know, everyone hates something new, but I had already anticipated that so for about a full year I would come in after hours and drain out their petrodiesel and replace it with Biodiesel. Never telling anyone that I was doing it. I did this in about 35 different pieces of equipment without a single complaint from the drivers, except that occasional comment that something must be wrong with their truck because it was smoking white instead of black. When the word got out that we were going to be using vegetable oil for fuel some of the drivers came to me complaining that they didn't want that 'stuff' in their trucks, so I would just say "too late" you've been using it for a long time now. The covert testing proved to be a complete success for many reasons, including the anticipated reluctance by the drivers.

When deciding to use biodiesel, what types of challenges did you have to overcome in your organization?

Actually, my boss was very supportive of the idea. He knew that I was getting bored with running the fleet so he embraced the idea of me doing something else to occupy my time. It did, however, take some time to create presentation to give to the board of commissioners to get funding for the program. But once I had finished the covert testing proving that my fuel was good quality, and the fact that I intentionally involved the public by making it a community recycling effort as well, AND I made sure to give them my presentation in a public forum with lots of people in the audience. I showed that I was making this fuel in my office for about \$.60 a gallon. I showed that it had been used in our equipment for over a year. I showed that it was biodegradable, renewable, environmentally freindly, and economically advantageous. I showed the savings in real dollars and the positive environmental effects of Biodiesel using EPA data. How could they say no to such a great thing? Well, they couldn't say no, actually, after my presentation the audience clapped and the commissioners followed suit by applauding as well.

Universal Studios

What types of vehicles are you using biodiesel in?

We are in the procurement phase now to have B20 provided to Universal Orlando. We would only use Biodiesel for our off-road applications like the maintenance tractors, and maintenance equipment. In addition, B20 is planned to run in the JAWS boats at the JAWS attraction. Starting next year, our resort boats which shuttle guests from the hotels to the attractions will be fueled with B20.

How much biodiesel do you use?

It is estimated we will use between 1000 and 3000 gallons a month.

What kind of effects has the biodiesel had on your equipment?

So far we have not run any equipment on Biodiesel. I believe the equipment will run quieter, smoother with a reduced exhaust order and an improvement in equipment life.

How do the users of the equipment feel about using biodiesel?

Very apprehensive. See the challenges below.

When deciding to use biodiesel, what types of challenges did you have to overcome in your organization?

1) Warranty: We have many vehicles including our shuttles and all of our maintenance trucks that are under warranty. We capitalize on this warranty frequently and using Biodiesel would void the warranty. Our maintenance and finance departments did not want to fight nor take the risk of voiding warranty on hundreds of thousands of dollars of equipment.

2) Lease Agreement: We lease much of our equipment. Lease agreements would be violated if Biodiesel were to be used in the vehicles. There is financial risk in lease end termination if Biodiesel were to be used. Our maintenance, legal and finance departments were not willing to take this risk.

3) Maintenance Costs: Servicing costs including fuel filters will increase the routine labor and material costs in the auto shop and attraction maintenance departments. This was not looked at favorably since our labor and non-labor resources are already stretched thin.

4) Fuel Tank Compatibility: It was brought to my attention that some of our older fiberglass tanks might not be compatible with Biodiesel. These tanks might have to be replaced. In addition there was discussion about our having to drain and thoroughly clean out the tanks before filling with Biodiesel.

5) Fuel Costs: The accounting, finance and purchasing departments were not interested because it would cost a few cents more per gallon than diesel.

6) Diesel supplier: We have along standing excellent relationship with our existing diesel fuel supplier who did not provide Biodiesel. There was stiff resistance in changing. So rather than change, we talked our existing supplier in providing Biodiesel.

7) Generator fuel storage life: We have many emergency back up generators on property that run on diesel. These diesels auto start each week to test functionality, but other than that they sit dormant most of the time. Fuel may stay unused in these fuel tanks for a long time. Shelf life on Biodiesel is questionable and therefore the generator operators refused to use B20 in these generators.

8) Summary: If it costs more, if it creates more work, if it adds risk to the operation or if is a change to the way we do business it is a difficult sell. However, thanks to the support of the SVP of Tech Services we are moving forward with Biodiesel B20 and I believe after Universal get used to the change, resistance will be greatly reduced.

Walt Disney World

What types of vehicles are you using biodiesel in?

1. We are presently using B20 in a Ford 6610 tractor. This tractor is used on Disney property pulling a PTO batwing which is a 15 foot wide mower used on the grass areas along highways.

2. Using B100 in a Toro workman which is an off road vehicle that transports 2 people. The unit has a dump bed on back with a 1500 to 2000 pound capacity.

3. Using B100 in a Toro Groundsmaster. This is a mower with a 72 inch deck which is our main type mower used around our parks and resort properties.

4. Two generators that we have found to be too heavy for our use but the units work fine otherwise. We use B100 in these.

5. Two pressure washers used to wash off horticulture equipment. B100 is used here.

Presently I am trying to use biodiesel in a pickup truck that we have identified as a possibility. All of the above equipment is part of the WDW Horticulture department.

How much biodiesel do you use?

For more information, contact Cynthia Lambert at 407-481-5672 ext. 320 or clambert@metroplanorlando.com.

I have yet to go through my first 1000 gallons. All of the above equipment from question one has been brought on to biodiesel over time. We have used the most fuel in the tractor, off road and mower. During winter the use went down due to reduced mowing. Once the truck comes on line I hope to be using between 100 and 125 gallons per week through out the summer and fall months.

What kind of effects has the biodiesel had on your equipment?

There has been only one fuel related problem. During the coldest night of the year the B100 did thicken up. No other fuel related problems. The clogged filters did not even become an issue though we were using mostly old equipment that had run a lot of diesel through the fuel system. Mileage/hours- we have not seen any difference.

How do the users of the equipment feel about using biodiesel?

They are happy to be part of something new, different and safer for the environment.

When deciding to use biodiesel, what types of challenges did you have to overcome in your organization?

I believe the two biggest challenges are first, identifying a cost savings. I have not been able to purchase biodiesel cheaper than straight diesel. Second how do you take a small biodiesel test/experiment and turn it into a larger operation using biodiesel.