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Why Aren't You Using Biodiesel?

Some of the greatest things that any single individual can do for our environment are cutting waste, recycling, and not polluting. What if you could do just that while boosting our economy, helping field-crop farmers, and saving yourself money? This is what some alternative fuels do. There are several fuels out there, but none has as many amazing characteristics as biodiesel.

100 % Biodiesel created from used cooking oil.

According to the U.S. Department of Energy, biodiesel is our nation's fastest growing alternative fuel. In fact, some states already require biodiesel to be blended in with diesel fuel. Illinois requires that all governmental bodies, state, county, and local, as well as universities, school districts, and mass transit organizations use a 2% blend of biodiesel. Minnesota mandates that not only governmental bodies, but all statewide sales of diesel fuel must be blended with 2% biodiesel. Legislation such as this has caused the production of biodiesel to triple in the last two years, reaching over 200 million gallons in 2006.

Everyone knows that petroleum diesel is a non-renewable, highly polluting, and expensive fossil fuel. Within our infrastructure, diesel is widely used. What we need is a fuel that can take the place of diesel with minimal change to our existing way of life. With the right precautions, biodiesel is that fuel.

Biodiesel is renewable, extremely practical, and environmentally friendly. It can be made from soybean oil, rapeseed oil, animal fats, various cooking oils, and oil from other plant structures. This is made possible by a process called transesterification. Glycerin is separated from the vegetable oil leaving behind methyl esters that are then refined to meet the ASTM D 6751 fuel grade specification, thus making it legal for sale in the United States. Making biodiesel yourself is also an option, but the likelihood of creating an unstable fuel is high, and caution is certainly advised.

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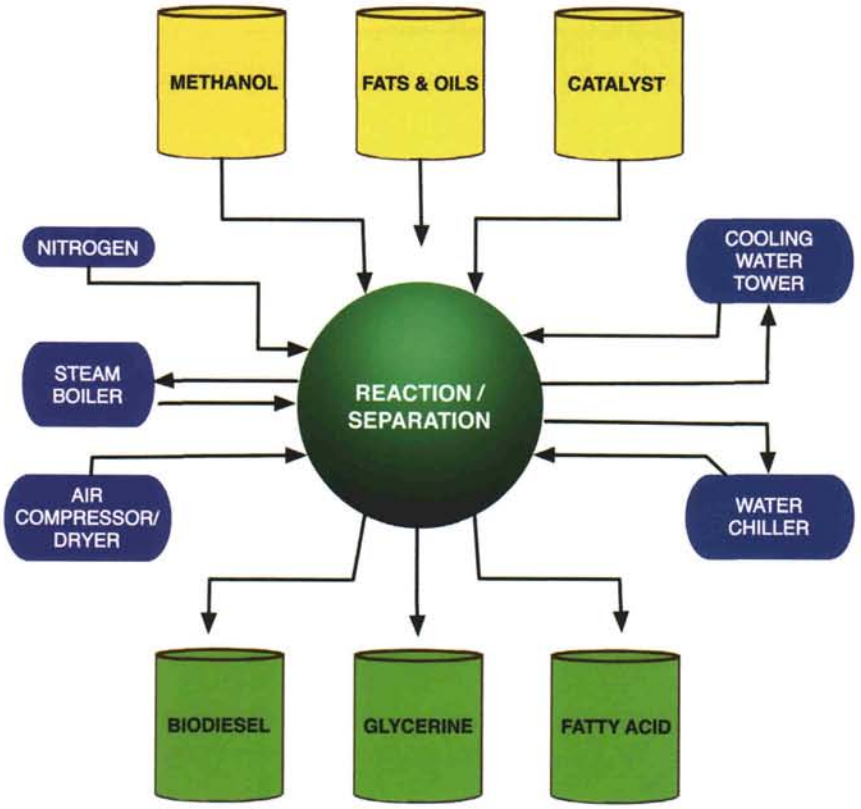
Biodiesel is not the same as petroleum diesel. In my opinion it is far better, but there are differences between the two that must be considered. A fuel that is 100% biodiesel (B100) is about 8.5% less powerful than petroleum diesel and cannot tolerate cold weather as well. Biodiesel also has a solvent effect that may dislodge petroleum-based particles from within the fuel system. This could eventually clog parts like injectors or filters. It means you would see a loss in power or fuel economy, gelling in the winter, and constantly dirty filters, right? Yes, but remember that those are the facts on paper and in test labs. If the right steps are taken in practical use, those problems can be virtually eliminated.

Right now the quickest and easiest way around those issues is to use a blend of biodiesel and petroleum-based diesel. How much to blend will depend on your use requirements. In addition storage capacities, machine age and condition, and climate are all things to consider. To mitigate those problems, a maximum blend of 20% biodiesel is an industry recommended standard.

I had a chance to talk with some industry professionals about biodiesel. I noticed a common theme among them. With the right biodiesel blend, there is no reason not to use it.

Brian Davis, owner of Phoenix Mobile Repair, is Master Certified in auto, medium, and heavy-duty diesel repairs by the National Institute of Automotive Service Excellence. Over the past year-and-a-half, Brian has repaired vehicles that have had petroleum-based diesel particles come loose and eventually clog fuel systems. This occurred after biodiesel had been in use. But after unclogging the fuel system, Brian was amazed at its overall condition after biodiesel use. According to Brian, fuel system parts like injectors, lines, and tanks were now much cleaner than when using petroleum diesel.



A flow chart depicting the process called transesterification to create biodiesel. The process starts with soybean oil, rapeseed oil, animal fats, various cooking oils, or oil from other plant structures.

Tony Nunes Head Mechanic at Chicago Golf Club has been using 11% biodiesel (B11) in off-road fuel since the fall of 2005. He says that they have not encountered a single problem associated with biodiesel. They store their B11 in an outside, above-ground tank just the same as in years past when they were storing petroleum diesel. They use B11, without any hesitation, in a wide range of equipment from a 1976 John Deere tractor to a late model Caterpillar skid loader. Tony says he changes filters on the storage tank four times a year and changes the equipment filters only once a year. He is very happy with their fuel choice and intends to use it well into the future.

I also contacted Keith Copersmet from Palatine Oil Company to discuss his experiences with biodiesel. Surprisingly to me, he was unaware of anyone having prolonged difficulty. His clients that purchase biodiesel are all very satisfied with the product and plan to continue using it. He does recommend that first time biodiesel users install a new fuel filter and have a supply of fuel filters on hand, because of the potential for clogging.

Keith also gave a breakdown of biodiesel pricing in the state of Illinois. A gallon of biodiesel made from 100% soy is more expensive per gallon than petroleum diesel. However, there are incentives provided by the state and federal government to encourage people to buy it. Whether in on- or off-road use, any biodiesel blend over 11% is sales tax exempt and comes with additional rebates. To achieve a happy medium and to pay less for an alternative diesel fuel, it works out that B11 is the most cost-friendly blend. As of late 2006, the general savings for B11 vs. 100%

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petroleum diesel was near 8 cents per gallon. Since fuel prices fluctuate daily, the current price could be different. Contact your local fuel supplier for exact pricing.

This does not mean that you can buy only B11. Any company that is a certified blender can create whatever formula you want. However, the more biodiesel that is blended in, the less you will save per gallon.

The post burn emissions of soy-based biodiesel are a fraction of petroleum diesel emissions. This is possible because of several things. Most of you know that when plants photosynthesize, they extract carbon from the air. When the plant is then processed to form biodiesel, that original carbon content from the plant will be released into the atmosphere after being burned in an engine. As a result, a carbon cycle ring forms in which little or no additional carbon enters the atmosphere. In addition to that, sulfur emissions are virtually eliminated, and the human health hazard of particulate matter is reduced by 47% when burning biodiesel. Biodiesel is also safer to handle than petroleum diesel. It is just as biodegradable as sugar and is ten times less toxic to humans than table salt.

Another great trait of biodiesel is the fact that it has the highest energy balance of any fuel. For every one unit of energy needed to produce biodiesel, 3.24 units of energy are gained. Petroleum diesel will only give back 0.8 units. In comparison to ethanol, biodiesel is 2.5 times higher in energy content per gallon. Those are staggering statistics if you ask me.

The list of benefits goes on and on. There is a ton of information out there along with plenty of reasons why everyone should at least give biodiesel a try. As use of the fuel progresses, it will become more user-friendly and stable. Costs will come down and availability will increase. Biodiesel has a very promising future with us in the United States. So I ask you again, why aren't you using biodiesel?

For more information, visit the following sites:

- National Biodiesel Board
  www.biodiesel.org/
- University of New Hampshire
  http://www.unh.edu/p2/biodiesel/index.html
- Minnesota Department of Agriculture
  http://www.mda.state.mn.us/biodiesel/default.htm
- U.S. Department of Energy
  http://www1.eere.energy.gov/biomass/renewable_diesel.html

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