

BIODIESEL

- The invention
- How does it work?
- The feasibility
- How is it made?
- *What is Biodiesel?*

History of Diesel

Rudolph Diesel

- Born March 18, 1858.
- Invented Diesel.
- Had to change it so that piston is filled with fuel,
- It will push it up the chamber then when it hits the top, The air mixes it
- It Ignites,
- And then it will push the piston back down.

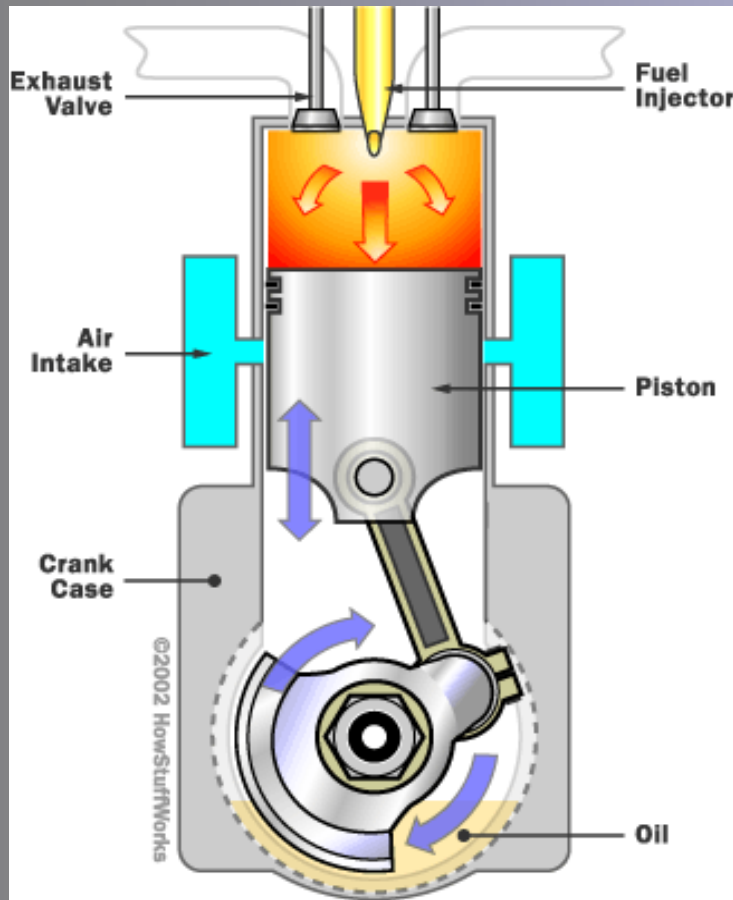


Diesel



- Filed for a patent February 27, 1892 in Germany.
- Patent No. 6720.

The Diesel Engine



- When a gas is compressed, its temperature rises, a diesel engine uses this property to ignite the fuel. Air is drawn into the cylinder of a diesel engine and compressed by the rising piston at a much higher compression ratio than for a spark-ignition engine, up to 25:1. The air temperature reaches 700–900 celcius, or 1300–1650 farenhiet.

Biodiesel

The History of Biodiesel

- Has been used since the early 1800's.
- Used first for making soap.
- Rudolph Diesel showed his first diesel using peanut oil, the original biodiesel.
- Henry Ford, original owner of the Ford company made first car, Model T with Ethanol.

What is biodiesel?

- Clean, alternative fuel
- Processed from domestic, renewable resources
 - Doesn't contain petroleum
 - Can be used with little or no change

How is biodiesel made?



- Bio-diesel is made through a process called
Transesterification where the glycerin is separated from the fat or vegetable oil.

Transesterification

- The process leaves behind two products:
- methyl esters
- glycerin.



Environmental Benefits of Biodiesel

- Reduces 50% Carbon Monoxide.
- Reduces 78% Carbon Dioxide.
- Fewer Hydrocarbons.
- Eliminates sulfur emissions.
- Reduces cancer risks by 94%.
- Ignites faster than petrodiesel.
- Produces more nitrides of oxygen. Catalytic converters stop that.
- Biodegradable and Non-toxic.
- Only alternative fuel to successfully pass the Health Effects Testing Requirements.

Two Issues of Biodiesel

- **Gelling up at temperatures below 40* Fahrenheit.**
- **Biodiesel is Hydrophilic:**
 1. **Water lowers heat. More smoke**
 2. **Corrosion of vital fuel systems.**
 3. **Forms crystals at 32*.**
 4. **Water restores microbes.**



Feasibility of Oil in Owens Valley

Contacted businesses

- Carl's Jr.
- Taco bell
- McDonald's
- Burger king

Questions we asked

- How many fryers do they have
- How big are they
- How much oil do they use
- How do they dispose of it

Carl's Jr.

- 3 fryers
- Medium size
- 5 gallons a day
- Throws it away

McDonald's

- 3 fryers
- Big
- 30 pounds a day
- Throws it away

Taco bell

- 1 fryer
- Medium
- 10 gallons a day
- Throws it away

Burger king

- 4 fryers
- Big
- 50 gallons a day
- Pays \$39.00 to dispose of it

The amount of oil used in a year
from each business

Total of Gallons Used Here in the
Valley

114,975

End