



Wood Powered Truck
Built by Wayne Keith, Alabama
Being Driven To Its New Home In Maine
...all on WOOD

2009-05-19



One Pound Of Wood = One Mile

- 5,000 miles on a cord of wood
- Capable of 80+ mph
- This truck has run 15,000 miles already...all on wood
 - including Alabama to California and back
- Lower emissions than gas/diesel power
 - Arguably less emissions than electric vehicle



Wayne Keith
Springville, Alabama



Ordinary Cars Present Some Real Challenges For Society

- Climate Change. Gasoline/diesel vehicles are the second largest source of greenhouse gases and air pollution
- Petroleum fuels are non-renewable
- We are energy dependant on some countries unfriendly to USA
- Cost of petroleum. Volatile swings in petroleum supply and price...generally in wrong direction
 - Ethanol is not the long term answer
- Developing countries in the world are just now becoming Automobile Societies...India, China...

*Long term prognosis for autos as we know them:
Sooner or later something has to change in a
big way.*



Solutions are complex and hard to come by. None are easy. No silver bullets.

- Higher mileage gasoline cars are not the long term answer
- Electric cars...just cause pollution at a source than the tailpipe...
At the power plant, often by burning coal or oil for generation
- Hydrogen fuel cells and other breakthrough technologies
 - looking further and further away from wide scale commercialization
- Mass transit alternatives have own set of challenges

BUT we are all starting to see many interesting efforts and advances

- Opportune time for inventors of all types....large and small



**We have just purchased a unique vehicle which we
(Ford Reiche & George Reiche) plan to drive from Alabama to Maine
starting May 18, 2009**

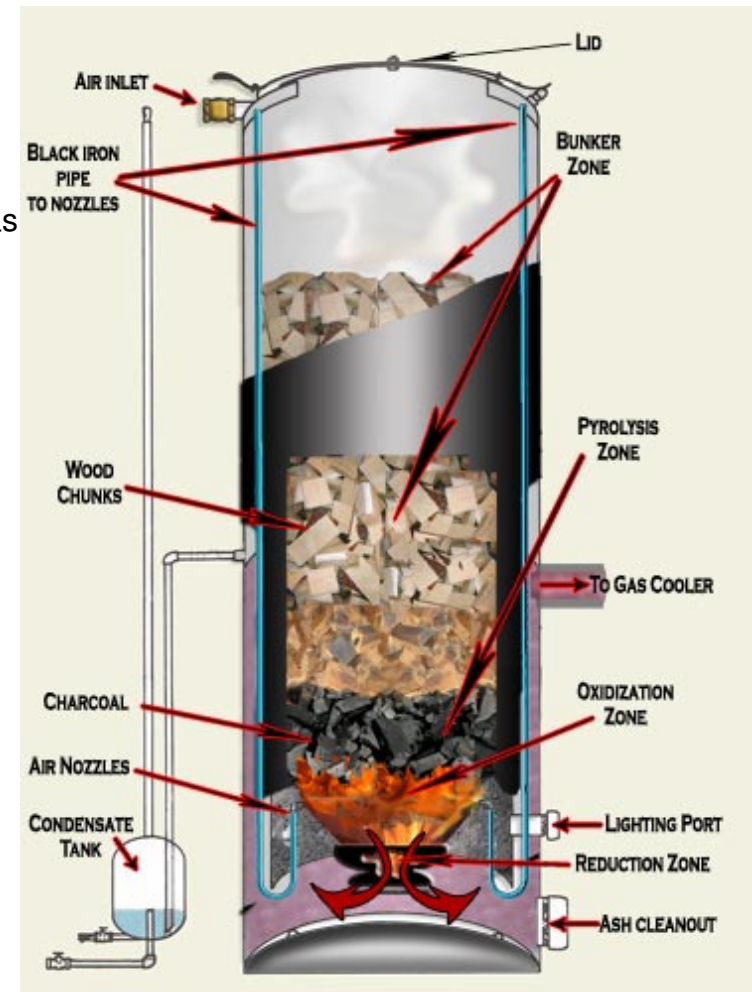
- 1991 Dodge pickup truck converted to run on wood
Only a handful of wood fueled motor vehicles exist around the country.
 - One story suggests 1/2 dozen in US, 1 dozen or so worldwide
 - This technology in a slightly different form was widely used during WW2
- Reputedly, the best vehicle of this current type was made by Wayne Keith
 - an ingenious Alabama inventor and farmer
 - Made four prototypes over the years of his research and tribulations
 - Customized Imbert and SD Gasification processes into an improved process
 - He is going to start his fifth prototype soon
 - We (Ford Reiche & George Reiche) are bringing the current one to Maine,
 - Starting 5/18/09 from Springville, Alabama
 - 1,800 +/- miles
 - 15 +/- states, plus Washington, DC
- We have ideas of our own to try out, such as modifications for use in a cold climate.



The Gasification Process

- Any kind of open fire is a chemical reaction...a sloppy one
 - Creates carbon dioxide, water, smoke, ash
 - Incomplete combustion
- BUT, Gasification is a controlled chemical process
 - converts thermal energy to chemical bound energy in woodgas
 - Clean and efficient combustion
 - Wood and other biofuel is “roasted”
 - Lower temp than open fire
 - Oxygen starved process
- Fuel...Wood (moisture level of 20% +/-)
 - Other fuels which work: charcoal, agricultural waste, etc
 - Wayne uses his junk mail for fuel...
- Creates synthesis gas, or “woodgas”...highly combustible
 - Hydrogen (18%), Methane(4%), Carbon Monoxide (20%)
 - The main combustion components
 - Carbon Dioxide (8%), Nitrogen (5%)
 - Dilute the combustion components
 - Like propane or natural gas
 - Only about 1/6 as rich in energy as propane or natural gas
 - Can replace gasoline in modified internal combustion engine

Generic Gasifier



The Process In The Truck

- Gasification reactor in pickup bed “roasts” wood to create synthesis gas (woodgas).
 - 250°C early to dry and breakdown fuel, then up to to 2000°C+ for the chemical reaction and woodgas refinement
- Woodgas is cooled in condenser system to nearly ambient temperature.
- The cooled woodgas is cleaned in filters
- The engine vaccum at various speeds controls the process speed in the reactor



“This is not your father’s Oldsmobile”

- Although there are some amazing aspects to this process and this piece of machinery, it is not the silver bullet.
 - The prototype reactor & power system is large & complex
 - Maintaining consistent quality in woodgas is a challenge
 - Operation of this vehicle is not entirely user friendly
 - On the other hand it is a great innovative effort by Mr. Keith, which advances the overall progress on these very important issues facing us all. We are excited to join the effort in a small way.
 - Consider what this thing does.....
 - and it’s got a HEMI.....
 - Hemi-cellulose
 - Wood is 25% Hemi-cellulose, 25% lignin, 50% cellulose.



Driving From Alabama To Maine

- Starting May 18, 2009 in Alabama
- 15 +/- States and Washington DC
- Blog and photos of this truck trip on our website:
 - www.safehandling.com
 - Also at our website and on Google & YouTube
 - More about the truck and Wayne Keith, us and Safe Handling
 - More about the technology

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