

Alternative fuel for cars – research proposal

[Technology](#), [Cars](#)



This research proposal is written for proposing further research on a suitable and economically sustainable alternative fuel for cars. This study was taken as need of the hour to reduce the cost towards oil imports and control pollution, which if not controlled now, will lead to worst Global Warming. Basically, this proposal is based on the current and projected car population. To be sustainable and economical, the researcher has taken the study envisaging on the car market. The cars are major attributes to emission. Since car population density is directly proportional to the human population density, there will be more harm to the people.

Car Population And Projections

Number of cars in the developing world will increase by 300% between 1995 and 2020. The growth in automobile population is growing at slightly less than twice the rate of the human population in North America and Western Europe. The growth of cars in developing countries is proliferating due to an economic boom. There have been no oil field discoveries since 1988 and there will be a global decline in oil production within 15 to 20 years. It is projected that by 2020 there will be well over 1.1 billion motor vehicles (cars) in the world. Riley, R (2006). World car population. Retrieved April 7, 2008, Web site: <http://www.rqriley.com/sld002.htm> There were 200 million cars in 1970 and 500 million cars in 1990. During 1997 there were 600 million cars and by 2027 the projection is double the figure of 1997 data. Elert, G (2003). Number of cars. Retrieved April 7, 2008, Web site: <http://hypertextbook.com/facts/2001/MarinaStasenko.shtml>

Current Global Warming and its Effect And Projection

CO₂ had varied only about 5 per cent from the last ice age (10, 000 years ago) to the industrial revolution year in the last century.

The CO₂ level in the atmosphere from the industrial revolution year to 2030 is estimated to be doubled. That means within 150 years, the CO₂ level in the atmosphere will be doubled. The main reason and one of the biggest single contributors to this change is emission from the burning of fossil fuels. We were able to control emissions by 95% in the last 20 years by the state of art emission control systems and research on fuel ingredients which resulted in lesser emissions. But looking at the projected car population the advantage gained through the emission control will be wiped off in a decade. Riley, R (2006).

World car population. Retrieved April 7, 2008, Web site: [http:// www. rqriley. com/moma2. htm](http://www.rqriley.com/moma2.htm)

Different Alternative Fuels

Merits and Demerits

Ethanol

Produced from starch crops like corn and other crops like sugar beets, cane or cellulose materials, fast-growing trees and grasses. It produces less greenhouse gas emissions than conventional fuel. One-third of US gasoline contains ethanol in a low-level blend to reduce air pollution. The disadvantage is, it gives lesser mileage because of its lower energy content than straight petrol.

Biodiesel

Produced from vegetable oils and animal fats.

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It produces less air pollution than petroleum-based diesel. Production is expensive. Cost can be brought down by doing research. No need to modify the engines. Good lubricant to the engine. Liquefied petroleum gas (LPG)- Fossil fuel, generates fewer air pollutants. It is expensive.

Compressed natural gas (CNG)

It produces very low level of pollution. The available refuelling station is still a problem. The storage place in the car occupies more space. Not able to go the long-distance because of the refuelling station availability problem.

Hydrogen

It can be produced from fossil fuels, nuclear power or from renewable resources like hydropower.

Fuel cell vehicles powered by pure hydrogen emit no harmful air pollutants.

Methanol

It is also known as wood alcohol. Methanol is produced by a process using natural gas as a feedstock. It will contaminate ground water. It gives very less mileage.

Electricity

It is very silent and no pollution at all. The cost of Vehicle fitted with an electric motor is on the higher side, the battery charging time is too long. It takes even 8-10 hours to fully charge. The cost of running the car is very cheap. It is only good for city riding with lesser kilometre. For a long-distance, it cannot be used because recharging is required for every 150 km.

Hybrid cars

It uses a combination of small internal combustion engine and an electric motor. It switches between IC engine and electric motors depending on the terrains and speeds. The cars with this type of arrangement are getting popular. The good example for this is Toyota Prius Ron giles (2006), Web extension to Babyboomers, Retrieved April 7, 2008 from the World Wide Web: <http://www.babyboomersguide.co.nz/Articles/Alternative+Fuels.html>

Methodology

The above said alternate fuels are under continuous research and until now no breakthrough outcomes has been implementation.

The problems with the above fuels are the cost of production of the fuel itself. It is costlier than petrol and diesel, the performance does not match with the existing petrol and diesel engines, engine modification cost is too high to accommodate the alternative fuel, refilling, recharging and distribution problem exists. Hence there is no practical breakthrough yet. Already all car manufacturers have invested hugemoney, time and effort in developing engines for performance and getting succeeded in terms of better torque, noise level, better pickup and mileage.

To cope up with this, the research should be practicable and down to earth without any major investment.

My proposal

My proposal is for Bio Diesel. The reason for selecting for further research is, it is viable, practicable and affordable alternative fuel with no major research cost comparing with a research cost of other alternative fuels. By using

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BioDiesel there is no pollution problem, no modification of existing car engines for using the same. Only slight adjustments required. It lubricates the engines thus gives longer life to it. The existing distribution system of petrol pumps can be used.

It performs better at par with petrol and diesel. It is very safe in transportation better than petrol and diesel because of the high flash point. Bio-Diesel works well with new technologies such as catalysts. The areas where the research is required is only on ensuring abundant economical availability of the inputs and reducing the cost of production by looking into the process. This researcher strongly recommends research on Bio Diesel as a future alternative fuel for cars to control the petrol, diesel prices and reduce emission which threatens in the form of Global Warming.

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