Alternative Fuel Sources Essay, Research Paper

Lines and lines of pumps decorate the elaborate design of a gas station in the year 2030. As a new customer coasts up to the filling station, he notices that in addition to the usual 20th century choices – regular, super, and premium gasoline – there are four additional choices: ethanol, natural gas, hydrogen, and even electricity? No, this isn t a page from a futuristic comic book, but instead an accurate prediction of what a gas station might look like in 30 years.

Pollution is an ever-widening problem in the world today that cannot be easily solved. Many methods have been developed to reduce pollution, but almost none of them has been proven effective in cars. Alternative methods of fuel such as ethanol, hydrogen, natural gas, and even electricity (batteries), provide a sure-fire way of eliminating harmful emissions from cars. Perhaps most important, alternative fuel sources can resolve this concern not only efficiently, but also cost-effectively.

It is true that in today s modern world, people care less and less about the environment, and governments are just as guilty by their indifference in controlling the matter of pollution. A survey by the California Energy Commission found that last year alone in California, people have driven for over 150 billion miles and have consumed almost 15 million gallons of gasoline along with it (California). Also, gasoline emits such poisonous gases as carbon monoxide and other ozone depleting chemicals, and that 15 million gallons of this harmful substance was used in one state alone last year. For this reason, alternative sources of fuel must be implemented into cars as soon as possible.

In order to fully understand the benefits of alternative fuels, an in-depth look must be taken into gasoline. Gasoline is made during the refinement of petroleum. It is composed of a long strand of hydrocarbons – arrangements of hydrogen and carbon atoms – which make it relatively inexpensive and enable it to create more energy for its weight (115,400 BTU’s per gallon) than almost any other fuel ( Clean ).

Unfortunately, there is a downside to this long carbon chain. Because of its chemical makeup, gasoline doesn t fully burn during combustion. According to a study done by the U.S. Department of Energy, it found that the amount of harmful emissions that are expelled into the air, such as carbon monoxide, nitrogen oxides, and other ozone depleting chemicals, that are byproducts of a car’s internal combustion, are enough to cause a theoretical green-house effect ( Replacement ). That is not the only problem with gasoline. Many other environmental hazards occur during the process of drilling for oil and petroleum. Oil spills cause millions of dollars worth of damages to plant and animal life, and also take countless years to clean up.

Gasoline has become so popular because it is very cost-effective. Presently, a gas station can purchase a barrel of gasoline, which holds approximately 20 gallons, for only $10-$15. This is obviously extremely inexpensive, because experts were projecting only twenty years ago, that the prices per barrel would be around $100 (Rist). Gasoline continues to grow in popularity as new oil sites are being found around the world.

Gasoline is the most financially-practical fuel. It burns more efficiently than almost all fuels, and costs only a minute sum. While that is enough to convince most people not to switch to alternative fuels, it must be known that gasoline is not environmentally-practical. The emissions from gasoline are causing such terrible disasters as global warming and ozone depletion, which are both harmful to the people and the future of this planet.

One type of alternative fuel, ethanol, is already in wide use. Ethanol is a grain alcohol, and can be produced from grains like corn or wheat. According to the magazine Chemology, Corn is the most popular source for producing alcohol, because it is widely available year round in the United States and it is relatively inexpensive compared to other grains (New).

Not only is ethanol a wise choice financially, it is an economically safe fuel. One source reports that ethanol s emissions are 85 to 90% less than gasoline. However, the process of making ethanol emits many harmful gases into the atmosphere. Also, it has been estimated that the amount of energy it takes to make a gallon of ethanol is almost equal to the amount that it would produce in a car (Stabler).

Although ethanol doesn t have as much energy content as gasoline, it still has a very high octane rating and can be considered a legitimate alternative source of fuel for cars. Ethanol is a very conservative route when dealing with alternative fuels. It is very identical to gasoline and is already implemented into most gas stations. During the winter months, many stations use a diluted form of gasoline, containing ethanol, to reduce the amount of pollution. Ethanol is also a very practical choice for alternative fuels. While it is more expensive than gasoline, it would reduce the amount of pollution in the world greatly.

Another source of alternative fuel that is widely in use today, is natural gas. Natural gas has recently become a very popular in the heating of homes and industries, because of its abundance in the United States and its low cost. Natural gas is mostly composed of methane, which is a naturally occurring gas in the atmosphere.

When natural gas is completely and correctly burned, it releases a staggering 89 to 96% less ozone depleting chemicals then gasoline. But, when natural gas is either burned not to completion or incorrectly, vast amounts of methane is released, which is a greenhouse gas. Another downside of natural gas, which is similar to almost all alternative fuels, is limited driving

range. Since natural gas takes up more space than gasoline, fuel capacity of a normal car s tank is reduced drastically. The only pro to offset this downside, is that natural gas has just about the same energy content as gasoline (Hendren).

Presently, natural gas is a popular alternative to gasoline. The United States Environmental Protection Agency estimates that every week in the United States, around three to four natural gas filling stations are opened. Natural gas is a very realistic alternative to gasoline for two main reasons. First, it is very inexpensive because almost all of the natural gas that is needed can be mined right here in the United States. Secondly, natural gas cars are already in production by major auto manufacturers. According to John Hendren, The only obstacles that are hindering the takeover of natural gas cars are it s decreased fuel capacities and its slow pump times.

A third type of alternative fuel that scientists are now considering is hydrogen. After all, it is used in space missions and is all around us in the form of water, so why not use it for internal combustion in cars? According to Ray Smith, hydrogen creates energy by combusting on contact with oxygen under a certain pressure and temperature. Using this method, hydrogen can be directly burned in a car s engine.

A new discovery by Ballard Power Systems of Toronto, Ontario, has increased the reality of a hydrogen powered car. The idea was proposed last year, where Ballard Power Systems showcased an invention that is an alternative way to combust hydrogen. According to their presentation, Ballard invented a hydrogen fuel cell which is comparable in size to a diesel engine. This radical idea proposed the use of sunlight to break apart water molecules and capture the hydrogen in the fuel cell (Smith). This means that a car would run on water and it s only

byproduct would also be water! While this prototype is not due until long in the future, scientists are now actually considering our idea as a plausible method of internal combustion in a car , stated Ballard vice president Paul Howard (Smith).

Hydrogen has countless advantages over gasoline. First, hydrogen fuel would be extremely cheap because it can be found anywhere. Even though a hydrogen fuel cell in an automobile would be very expensive, it would be offset by these low fuel prices. Secondly, it is probably the most environmentally safe fuel because there are no emissions, except water. Also, there would be no need for industrial plants to synthesis the hydrogen, as it can be found almost anywhere in the form of water. In the future, hydrogen could provide the ultimate transition from gasoline to a clean, cost-effective alternative fuel.

Perhaps the most common-sense choice of alternative fuels would be electricity. After all, what does every child s car, truck, and bus operate on? A choice that might seem radical at first, might not be that far from home, as batteries become more popular as an alternative source of fuel for cars. Surprisingly enough, a hybrid car that runs on a battery operates as simply as a toy – a button is pushed to turn it on, and after so many days of use, it needs to be recharged.

While this may seem like a simple and practically zero-emission automobile, there are many roadblocks on the highway of perfecting electric cars, according to Tom Arrandale. First, no such battery exists. According to, the largest battery, constructed by General Motors, can only travel for just over 100 miles before it needs to be recharged. Also, it weighs almost as much as the car and almost doubles its price.

Another problem has also been proposed in a report by the California Energy Commission. In it, it tackles the question if electric cars are really zero-emission. That depends on the electric

source. If the battery is charged with power from a plant that burns coal, then that vehicle is contributing to emissions in the environment. However, if the generator is run by solar power, than it would produce almost no emissions ( California ). While electric cars due provide a semi-realistic alternative to gasoline, these cars are long due in the future.

Pollution is an ever-widening problem in the world today that needs to be resolved, and the resolution is alternative fuels. Alternative methods of fuel such as ethanol, hydrogen, natural gas, and even electricity, provide a cost-effective way of eliminating harmful emissions from cars. Possibly the prediction stated earlier will prove to be incorrect. After all, with inventions such as a hydrogen fuel cell, the changing face of gasoline stations might translate into no station at all. Instead, there would be an unlimited, free source of environmentally-safe fuel in the form of water. However, while the future of fuel is as unclear as a smoggy day in L.A., its present is for sure – gasoline is here to stay … for a little while that is.

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