Freedom From Fossil Fuels for Vehicles

Contributed by Bright Future Staff
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Modern society depends on mobility to sustain modern lifestyles. Personal transportation facilitates individual freedom and transportation services distribute goods and services all over the world. Without this mobility the modern lifestyle we have all quietly become accustomed to would simply not exist. Most of this mobility has been provided by the efficiency and reliability of the internal combustion engine which powers the vast majority of our vehicles. Each day it becomes more clear that, if we wish to perpetuate a high quality of life on planet earth, we are going to need an alternative to the internal combustion engine.

Internal combustion engines require fuel to burn in order to produce power. This process has two serious drawbacks; 1. Most of the fuels that work well in internal combustion engines are becoming more expensive and the increasing demand for these fuels will eventually outpace supply, and 2. Combustion produces heat, greenhouse gases and other pollutants.

Most of the development of new engines has focused on using new types of fuel to replace the petroleum products that most of these engines burn. These fuels fall into two categories: 1. bio-fuels such as ethanol and bio-diesel, and 2. fuel cell engines that are powered by hydrogen. While use of these fuels will reduce dependency on petroleum products and reduce emissions, bio-fuels still produce some emissions and producing hydrogen requires high amounts of energy. While these fuels offer improvements over the fossil fuels, they are still are not a complete solution to our long-term energy needs for vehicles.

Over the past few decades there have been efforts to design vehicles powered by electric motors. Electric motors are powerful, quiet and efficient and do not produce significant amounts of heat or emissions. The big problem with using electric motors to power vehicles is providing a mobile supply of electricity for them to run on. Until we come up with a way of effectively collecting electricity while the vehicle is moving, the capacity of electric motors is dependent on batteries it uses to store electricity.

This is where the efforts to design electric vehicles have run into obstacles. The batteries available until very recently were very heavy and lacked storage capacity. By the time enough batteries to power a car are installed the car weighs so much that the motor can barely move it. The few designs that made it from the drawing board to the road ended up being tiny cars that had very little power. The ratio between the weight of the batteries and the strength of the motor was so poor that these designs were simply not practical.

Fortunately, the enormous popularity of cell phones, notebook computers and other portable devices that run on batteries have attracted more resources to the development of lighter more efficient battery designs. Until very recently none of these designs was efficient enough to be practical for use in heavy vehicles such as cars and trucks.

Coming into the market within the next year or so is a new class of batteries and electric motors that have been designed for use in moving vehicles. EEstor of Cedar Park, TX has come up with an energy storage device (they do not even like to call it a battery) capable of storing enough energy to power a modern car for hundreds of miles and can be fully charged in as little a 5 min. This design uses a ceramic material coated with aluminum oxide and glass in its construction which eliminates the hazardous chemicals used in most batteries. While it will still be a few years before this technology is available to the general public enough real-world results have been demonstrated that cars are being designed around this storage device.

Feel Good Cars in Toronto, Canada is already manufacturing electric cars and currently has a low powered model available that runs on conventional batteries. The folks at Feel Good Cars are hard a work producing a full powered model that incorporates EEstor's technology and expect to begin shipping the new full-powered models in 2008.

Feel Good Cars expects that full-powered versions of their cars will be able to drive up to 500 miles on a single charge, which would cost about $9 worth of electricity at current prices. In comparison to gasoline this is equivalent to about 45 cents per gallon. The new engine (more properly called a "motor") would cost just slightly more than the average internal combustion engine and produce power on par with today's SUVs and performance sedans.

While this innovation may go a long way to solving our energy needs for transportation there is still more that needs to be done to make electric cars a complete solution. The vast majority of electric power plants burn fossil fuels to produce electricity. So even though electric motors turn out to be more efficient in the long run than internal combustion engines there still are some emissions related to their use. However, electric power plants can be powered by clean renewable sources like solar and wind power, and there is already a strong movement to increase use of these kinds of technologies to produce electricity.