

When will Detroit learn how to build electric cars?
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The 21st Century should be an exciting time for automobile technology, too bad it isn't. An electric car, what a wonderful idea! It can be used for a second family car and for those who travel little. Electric is also the right choice for route traveling. School buses, mail, UPS and FedEx routes are good examples. Milage can be planned and then a safe reserve added. For school buses, after the morning run the buses come back to the garage and a fork life pulls one set of batteries and replaces the electric pack with charged batteries. Or, enough batteries may be able to be carried to operate the buses all day. These are two very simple options. Charging the battery packs can be done during off peak electrical time and by solar and wind energy. Fuel prices for route deliveries would be stabilized with using electric.

This is the second monograph about electric automobiles. It is important to push for this type of transportation for at the very least, stable pricing for fuel. One of the hardest changes to make is in portable equipment. This includes power tools and transportation. It is the opinion of the Foundation that the power grid will adjust to the higher demands of electrical vehicles and to responsible production of electricity as events unfold. As for now, let's us encourage rational and logical development of electric vehicles. Some of the links listed below have it right. Hopefully Detroit will learn before the auto companies are out of business. The demand for electric is here. The demand for Detroit's concept of electric will not be viable until Detroit starts producing electric automobiles and transportation that are not based upon 19th Century technology and concepts.

For many who have a second car an electric would be able to have the same capabilities as route carriers. Instead of swapping out batteries, we refill with electricity. How do we get past the long charging times for the batteries? Simple, a dumping station. Either by large capacitors or additional batteries at the charging station. The capacitors or batteries would be charged over time. When it is time to recharge the car batteries, the car would be hooked to the dumping station which has already been charged. The electrical charge would transfer within about the same amount of time as it takes to fill up a traditional car with gas. You are then back in action and the dumping station starts the process of recharging the capacitors or the charging batteries. Also, solar and wind can be part of the equation.

Where is the Problem? It is the philosophy behind the design of the vehicles. If the engineers would be willing to build the vehicles from scratch instead of retro-fitting traditional vehicles the design would be different. This is the Foundation's recommendations for building electric vehicles.

Each wheel will have an independent reversible DC (direct current) electric motor. It should be at least 48 volts, the higher the better within reason. Along with each wheel having an electric motor, the braking system will be redesigned as well. An enclosed magnetic system with Neodymium magnets will be the braking system. These are the super magnets similar to those used to stop the rides that are designed to fall at the amusement parks. The parks use this system because of the fail-safe feature of these magnets. If the power goes out, the magnets are not affected, they keep on working. No squashed passengers.

This would be our new braking system. The brakes will never wear out. They are sealed against the elements. The only reason to replace the brakes is if damage has occurred. Also, these magnets can be used to help recharge the batteries. This type of braking system works well for the Salt Flats cars going above the speed of sound.

The electric motors will have about 12 horse power on the front wheels and eight horse power motors on each of the back wheels. Power to the front wheels will help get the automobile up to speed. Then these motors will coast while the power from the back wheels are used to continued traveling. Obviously, the specific size of the motors will depend upon the weight of the vehicle. A automobile that is considered full size, these days, should be able to get by very well. Smaller cars will need less. Large cars, more.

The motors are controlled by a computer chip to adjust speeds for turning just as the differential does in today's vehicles. Let's see, a five hundred pound differential costing \$500 to \$1,000 or a 50¢ chip weighing 3 grams? You decide.

While we are pulling the differential, let's pull the transmission, too. Why? Because, electric motors work differently. Even though they are often rated in horse power, it is actually foot pounds. There is more power in an electric motor as it starts up. The internal combustion engine has it's power when revved up to a specific standard. ICEs are not full of power when running at low RPMs (revolutions per minute). This is where the electric motor is far superior.

A train locomotive uses an asynchronous traction motor often it is the DC LC 3000 (direct current 3,000 volts.) Each set of locomotive wheels (one left and one right) is driven by one of these motors. Turning is achieved by having the wheels bevelled. The wheels are smaller on the outside of the wheel and wider inside at the rim.

This system gives the most power for starting up. Depending on the foot-pounds the vehicle is peppy or doggy. The locomotive has powerful electrical generators providing the electricity for the motors. We should be able to get around on batteries.

If we need a hybrid vehicle, then it should be designed after the locomotive. In other words, the ICE gas motor would power a generator creating power for the electric motors. It is totally foolish to have two power-trains propelling an automobile. This means more weight, more things that can go wrong, and a system that can be quite unstable with one source fighting the other source for control of the vehicle.

A hybrid system designed after the locomotive will mean that the ICE motor will only operate at the most efficient level of operation, meaning less use of fuel to operate. Power would not be needed to move the vehicle. The electric motors would do this. The ICE would only be used to keep the batteries charged. And it would be easier to change out the type of gas motor to run the generator. What would be best for you, gasoline, diesel, natural gas, or green fuels.

By removing the transmission and differential, an approximately 60% power loss is removed from the vehicle. This would mean that a car needing 160 horsepower because of needing the transmission and differential could run with 64 horsepower using direct drive reversible electric motors.

Remember that the term foot pounds was used earlier. Foot pounds is torque and is different than horsepower, but we can approximate what is what. [Wikipedia](#) defines foot pounds at this link. Also, follow the other links from Wikipedia for further research. As a rule of thumb, electric motors have 2 1/2 times the real power of a gasoline motor. This is not exact, but is a good reference number. And it depends on what type of electrical motor being used. The suggestion for the front wheels of an electric car was 12 horsepower on each wheel. These motors might be motors with a starting high torque and the back wheels, 8 horsepower on each wheel, might be high efficient motors. These would be slow on starting but excellent at high speeds.

If we use the sloppy 2 1/2 times the power in electric motors over gas powered, the car will have 100 horsepower, more than enough to run down the road similarly to a gasoline powered automobile. [Wikipedia](#) states an electric motor needs 746 watts per horsepower. So let's call in 1,000 watts or one kilowatt.

If we look at a heavy duty car battery, the specifications are 12 volts at 150 amp-hours. That equates to 1,800 watts. But, in real life you only have 50% to use which means 900 watts. If the electrical motors were all running at full power, that would mean one hour down the road.

The 48 volt reversible DC motors spin so that if the car had 15 inch wheels, it would go down the road at 140 miles per hour. Our top speed is 70 mph. This means that we could get well over 2 hours realistically because most of the time we would be running using only the back wheels, not all four wheels.

How do we make 12 volts into 48 volts? This will take four car batteries in series. So a two hour battery pack has for car batteries. How many hours do you need to drive in a day? For every two hours that is needed additionally, another four battery pack is added in parallel. To go across country we would need to be pulling a U-haul trailer with batteries. Every so often you stop and swap trailers for one that is re-charged.

Every one hour battery pack of four batteries will run, our price, about \$400 to \$1,200, about 1/3 the cost of gas for a year and the batteries will last 3 to 7 years. A car company could put a battery pack in for less than \$200 per hour of driving time.

There are more efficient batteries available, marine batteries are a good example. Even the nickel cadmium batteries used in computers have better performance, but for a price.

As you can see, the way automobile companies are going with electric vehicles make no sense whatsoever. These cars with an 80 mile range, less than one hour straight driving time can easily be priced under \$20,000 and be passenger safe as well. The electric motors are about \$400 each if we bought them off the shelf, about \$1,600 for four. What do you think a car company price would be for these motors? \$200 - \$300 each? It would be less than the cost of a current ICE motor and the cost of transmission and differential can be eliminated. too.

And if we added a \$1,500 watt diesel generator only to charge the batteries, we should be able to get a true fuel

milage that are hundreds of miles per gallon, without having to coast the car down hills and the other silly things the car companies would suggest to achieve the milage they claim. The generator would operate independently of whether the car was moving or not. The generator would start on its own if the batteries needed charging. Most individuals could do what they normally do having a car with an 80 mile range. Need more distance, add another battery pack or rent a U-haul for batteries.

Offering a plug-in will become an incentive for employers and other businesses to offer similar to free parking for shopping at a store. Most folks would try to survive off of the free juice. It's human nature.

If you were the type of person who would be willing to build their own vehicle, there are plans on the Internet. Most home car builders use small cars. The Foundation would suggest using a crew cab style pickup with a small bed. You will be able to seat four to six people, and have the batteries in the front of the box inside a box cap, with proper ventilation for safety. This will allow for the typical trunk space or more for carrying cargo or luggage in the back of the box. If you want a generator, it can sit on the motor housing. The ride will be smoother with 200 pounds of batteries in the middle of the vehicle. Think of how much weight a motor, transmission and differential adds to a vehicle. A motor can be 400 to 1,00 pounds or more. The transmission will add another 100 to 150 pounds to the package. The differential can be 250 pounds or more.

So which vehicle is really the heavier, a traditional car or an electric. Which should be easier to maintain, gas or electric.

When is Detroit going to put some common-sense into the design of electric automobiles? Let's hope it is soon.

This following links offer realistic approaches to electric vehicles. These cars are 80+ miles on a charge and will do freeway speeds. Some vehicles may not be in production as of this publication.

E-traction.com

Electric mass-transit buses.

EV Innovations, Inc

Automobiles, motorcycles, mopeds.

Evconvert.com

A site promoting converting to electric.

Liberty Electric Bikes

Electric bicycles and motor bikes.

Myers Motors.com

Three-wheeled two-seater.

Nissan

This is an electric Nissan.

Phoenix Motorcars

Full size vehicles.

REVA Electric Car Company

Car company in India worth checking.

Tesla Motors

If you want a sports car that out-performs most high-end sports cars and is electric. Sedans will follow.

Zap

Three-wheeled highway and also urban cars and bikes.

Run your car on a bicycle pump? Compressed air.

Another way of creating transportation is with compressed air. MDI a traditional motor, except it runs on air. About 4500 psi of air is pumped speeds the car warms the air with a heater. The project is not encouraging since the USA website partners website together and therefore would not meet safety standards in the United In India the Tada car company is supporting the project. It may be worth following in order to see if this concept car meets



(Motor Development International) has an engine which looks similar to into an air tank. The cars have over 100 mile range and for freeway has been suspended. There are comments mentioned that the car is glued States. standards and can be produced.

These links will not be updated. All links are working upon publication. No endorsement is made. Links are provided as a convenience.

