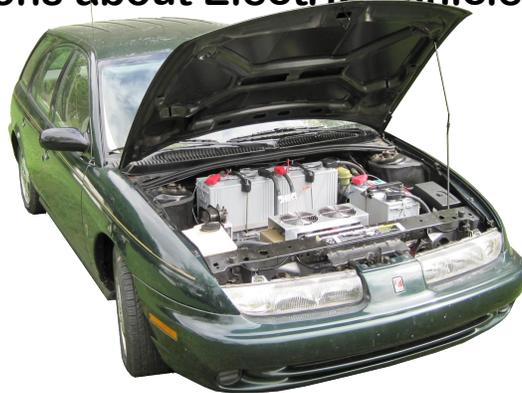


Common Questions about Electric Vehicle (EV) Conversions



Is it a hybrid? No, it's a plug-in electric vehicle -- no gasoline. This means the only source of power is the on-board battery pack. When the battery pack goes dead, the car needs to be plugged in and recharged.



Where can it be plugged in? Any standard 110 volt outlet. Some EVs do require the installation of a special 220 volt outlet.

Isn't it just a big golf cart? I guess so – but it's a golf cart with most of the comforts, speed and safety features of an automobile.

What doesn't an EV conversion have? My Saturn will not have power steering, cruise control or air-conditioning. These features will appear on many production electric vehicles, but for most home EV conversions, they are not practical.

So what does it have? My conversion has many of the features of the original Saturn (the donor car) -- electric windows, power brakes, sound system, dual-airbags, heat, etc.

How many batteries are there? There are 12 batteries weighing about 700 lbs. with a total pack voltage of 144 volts. Most home conversions have between 10 and 20 batteries, and pack voltages can be anywhere from 72 to over 300 volts, depending on the type of electric motor used and the objective of the person doing the EV conversion. Battery packs can weigh over 1000 lbs. and may account for more than 1/3 the weight of the entire vehicle.



This conversion uses very heavy lead-acid batteries -- however, many recent EV conversions are taking advantage of some new lithium based batteries, which are smaller, lighter and much more expensive.

What happens when the batteries go dead? Unlike a gasoline powered car, which will just stop, an electric car will slowly lose speed and power as the batteries approach a discharged state.

What is the top speed and range? EV conversions can reach freeway speeds in excess of 55 mph and have a range between 10 and 100 miles. Some key factors that can affect range are battery pack type and size, driving habits and cruising speed. Rapid acceleration and speeds over 40 mph will reduce the range. At this point my Saturn has been drivable for only a few weeks and has some speed and range issues that need to be ironed out.

Could an EV be your only car? Probably not right now. You may want to keep a vehicle that has greater range, passenger and cargo space. However, as production EVs advance, an EV could become your only vehicle.



How much does a home EV conversion cost? Average is about \$10,000. This can vary and will depend on the components used and the objective and skills of the person doing the conversion.

How much does it cost to operate an EV? At 13.5¢ per Kilowatt hour, it costs about 7¢ per mile. An EV does not require oil changes, tune-ups or exhaust-system repairs, and cars with regenerative braking will be easier on brake pads. On the downside the battery pack may need to be changed after 15,000 – 20,000 miles. It may be cheaper to operate an EV; however, the savings are not significant.

How long does an EV conversion take? This conversion took over 2 years; some people can do it in 3 months. Free time, skills and tools available will play a big part in this.

What are the advantages of an EV? An EV can be charged at home, work or anywhere. No oil changes or tune-ups, just an annual state inspection, tire rotations and brake pad replacements. Driving is very quiet and smooth, there are no tailpipe emissions or smells. They have a minimal dependence on oil.

Are there any disadvantages? Yes, many. Range is limited, and charging takes hours. From a safety standpoint, the car makes no noise when it's running, which can be dangerous to pedestrians and sometimes to the driver if he forgets to turn the car off.

How do electric vehicles help the environment?



A gasoline engine is only about 30% efficient. This means that 70% of the energy used to power the gasoline engine is lost through heat and friction from all the moving parts.

The efficiency of an electric motor is about 85% -- an electric motor has only 1 moving part -- 85% of the electricity that goes into the car is used to power the car. Some electric cars, including this conversion, have regenerative braking, which recharges the batteries while slowing the car.

An electric vehicle releases no pollutants and makes little noise. While the primary source of electricity on our power-grid is a fossil fuel, like natural gas or coal, there are other ways to generate electricity.

Most of the of the material from an old battery pack can be recycled.

So who really killed the electric car? In my opinion: the batteries did it and are are still doing it. They're heavy, bulky, expensive and require special care and take hours to recharge. The good news is that battery technology has been, and still is, evolving rapidly.

Recommended Books and a DVD

Book: "Convert It" by Michael P. Brown with Shari Prange.

Book: "Build Your Own Electric Vehicle" by Seth Leitman and Bob Brandt.

DVD: "Who Killed the Electric Car" by Sony Pictures Classics.

The closest electric car club (that I am aware of) is the Eastern Electric Vehicle Club, which meets once a month in the Philly area. For more information about this club, visit www.eevc.info

While my electric Saturn is able to drive around town on its own, there are still some performance and range issues that I am continuing to iron out.

For more information about my electric Saturn conversion and some video clips please visit

www.zuglet.com

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