



THE EV 2.0

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INTRODUCTION

- A car that runs only on electricity has been an idea since 1832
- Reasons for not being adopted
 - Short battery life
 - The distance you can drive
 - The design
 - Complexity of designing such a system.

THE EV 1

- Bridgestone Corporation held the world solar Challenge in 1987
- General Motors participated and won; then decided they would build an EV for commercial use.
- First model was made with lead acid batteries and the range was short
- Second model was made with nickel-hydrate chemistry which increased the range significantly
- The car was recalled because they weren't making a profit.

PROFESSOR GANELY

- In the recall of the EV 1 Howard Professors asked GM for the car so that they can do research
- The logic boards for the motor controller were removed, as were the battery's modules and all associated high-voltage system components
- Professor Ganely turned the electric car into a hybrid car in 2003
- No research has been done on the car since.

GOAL

- My goal is to turn the car into an electric car then an autonomous vehicle.
- So far, I have made a list of parts that should be in the vehicle
- I am in the process of scheduling a visit to the car to check in the parts are still there.

Propulsion

Unlike other solutions in the market, EchoDrive does not replace the existing drivetrain but rather adds energy to it.

System Controller

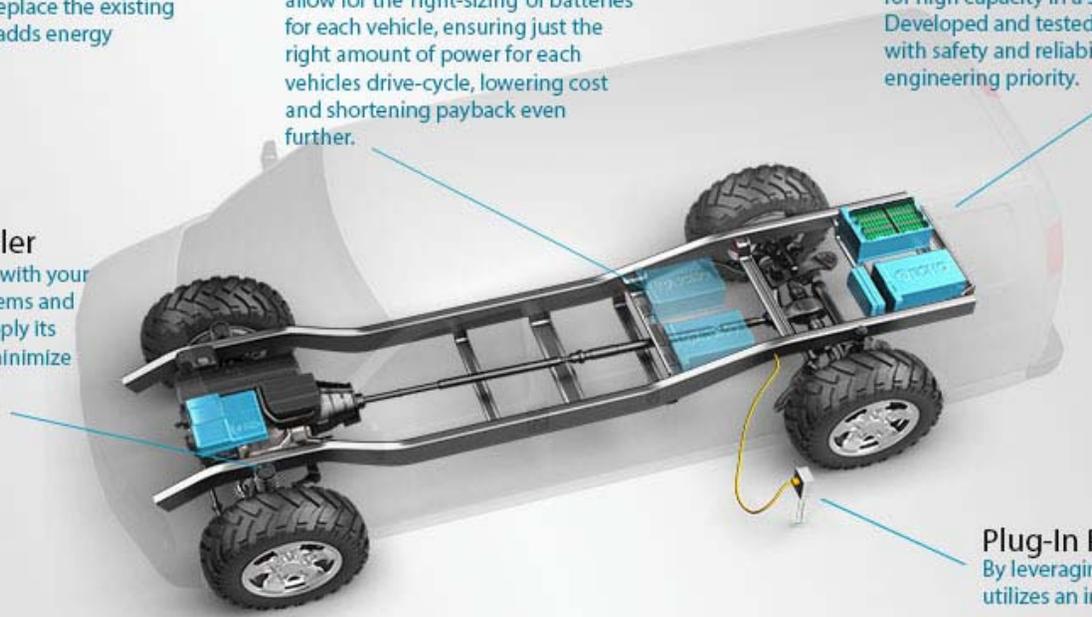
EchoDrive integrates with your vehicles existing systems and learns how best to apply its electrical energy to minimize the use of fossil fuel.

Modular Battery Pack

EchoDrive's modular battery packs allow for the 'right-sizing' of batteries for each vehicle, ensuring just the right amount of power for each vehicles drive-cycle, lowering cost and shortening payback even further.

Advanced Li-Ion Batteries

EchoDrive advanced Li-Ion batteries allow for high capacity in a small space. Developed and tested over several years with safety and reliability being the top engineering priority.



Plug-In Power

By leveraging grid power, EchoDrive utilizes an inexpensive and cleaner energy source stored in its battery packs. This cheap energy helps EchoDrive can increase fuel efficiency by 50% or more.



YEAR 1

- **Goal of Year 1:**
 - Make list of parts in EV 1 check to see if it's still there
 - Make sure Professor Ganelly hybrid works
 - Then design an electrical propulsion system based on vehicles dimensions

FUTURE PLANS

YEAR 2

- Design and add a navigation system
- Test it on campus

YEAR 3

- Design and install an AI system
- Test on campus

YEAR 4

- Make a self driving car
- Test on road

ADVANTAGES

- High Performance Vehicles
- High response
- No noise
- No pollution at vehicle level
- Lower maintenance & driving cost
- Highly safe
- Effective Traction Control

DISADVANTAGES

- Long charging time
- Low Range
- High cost

LEARNING OUTCOMES

- Practice with CAD and design software
- Real world technical experience with electrical and mechanical systems
- Allows students to be innovative
- Working as a team it teaches time management.



ANY QUESTIONS ? ? ?

AS ENGINEERS OUR SOLE PURPOSE IS TO CREATE OR IMPROVE ON IDEAS.

REFERENCES

- <http://facbooik.com/mainpage/detail/how-an-electric-car-works>
- http://www.greencarreports.com/news/1107585_modern-electric-cars-at-20-from-ev1-to-bolt-ev-where-are-we-now