

FALL 2006

EV America

COMMITTED TO QUALITY, SERVICE, AND SAFETY



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ENGINEERING IS BASIC!

There is a lot of interest in Electric Vehicles (EVs) and that is pretty exciting! New companies are forming and there are lots of claims about vehicles and batteries. We read about one EV with 250 mile range and 3.5 hour recharge! 12 Years ago we heard about the 10 minute recharge. I encourage anyone that hears anything like this to do a little basic engineering.

For example, the average EV conversion gets 3-5 miles per kw-hr. If we assume 250 miles and 5 miles / kw-hr; that means you need a 50 kw-hr battery pack. That represents 50,000 watts. In a lead acid vehicle that equals about 3200 lbs of lead; this vehicle uses lithium ion. Now to the charging part, if you have to recharge 50,000 watts in 3.5 hours, that is 14,284 watts per hour. We know that one watt equals one volt x one amp. So if 230 VAC is going to recharge 14,284 amps, that is 62 amps! That means you need a 230VAC 70-80 amps circuit. Are you with me? Few people have a 70 amp 230 VAC circuit.

I called the Sales Dept of this company; they were kind enough to answer my questions. They have 6800 LiIon batteries in series and parallel. Yes --- 6,800 batteries! The 250 miles is based on 50 mph 0% grade at a track – no stops. The 3-1/2 hr recharge is based on 220VAC and 70 amp service. Our calculations were pretty close.

This company claims 1 cent per mile. We assumed above that the EV got 5 miles per kw-hr. So they must assume a utility rate of 5 cents/ kw/hr. That is considerably low.

The 5 mile per kw/hr is very good. They claim the aerodynamic drag coefficient is 0.338; this is exceptional for a convertible. The EV1 had a drag coefficient of about 0.19 after the mirrors, etc. were removed. Drag becomes the predominant force at 35-45 mph and increases with the square of the velocity.

I am not trying to punch holes in any EV company but I am trying to encourage people to use common sense and a little engineering. So the question is why. Why do companies give information that seems exorbitant? The answer is simple - to get customers and investors. Most investors are not engineers.

So I encourage you to do the engineering whenever anything sounds too good. Also share your questions with others, including the company. If you think my analysis is wrong, please contact me.

I want to wish everyone a very Merry Christmas & Happy New Year! May God bless you and your family with the fruit of the Spirit --- love, joy, peace, patience, kindness, faithfulness, gentleness, and self-control. True gifts that cost nothing, but are worth everything.

Bob Batson

REMINDER !

Members of EVAmerica are entitled to a 10 percent discount on EVA components up to a total discount of \$30 each quarter. Simply remind us when you place your order. A 1-year membership is automatic when you buy \$300 or more in a single order or pay \$30 for membership.

***EVA has given \$17,077 in EVAmerica Discounts thru November 15, 2005!
EVA's Customer Service – That is why EVA is No. 1 !!!***

***Bill Shea built a Winner!
A Triumph GT6
Salem , NH***



***Bill remembers his brother having a Triumph GT6 many years ago. Bill bought one and restored it as well as converted it to Electric. It is a beauty!
And fun to drive – according to Bill.***

NH License plate

“GT6+EV”

WALTER COLBY
Amherst, NH

CONVERTS HIS FIRST EV!



My first conversion was a 1971 VW Bug – it also was red!

Walter is already looking at his next vehicle to be converted!



THE FUEL CELL T-BUCKET
By
PONAGANSET HIGH SCHOOL

Greenville, RI



***Students involved with T-Bucket
EVs are a life changing experience! Just look at the smiles!
What could your school system do?***

***Ross McCurdy is Instructor – Congratulations Ross!
Visit www.protium.us***

EV CRUISER
By
HOBART PUTNAM



Hi Bob,

Some photos of the "Ev Cruiser." It is fun to drive and I am thoroughly enjoying the experience. FYI: The Pt Cruiser was/is an excellent choice for this "flashlight technology" conversion, as it is basically a compact mini-van that can handle quite a load without danger of collapse. And I have found that it is easy to work on, especially easy after the ice components were out of the way.

Outwardly as you can see by the photos, it appears to be perfectly stock, and the load of lead does not make it appear to be unduly low. It appears to be only slightly lower than before the conversion. The ride is somewhat stiff however, as I have the original Good Year Eagles aired up to around 40 psi for some added rolling and load handling efficiency.

Once again, thank you,

*Hobart Putman
Mayville, MI 48744*



***TERRY RICHARDS
Pinckney, MI***

48V ELECTRIC MOTORCYCLE



Just for your info. Here's a photo from Kalamazoo Community College in Kalamazoo Michigan, with four electric motorcycles at one place at one time. Mine is the yellow one, but both mine and the orange bike (which belongs to Doug Martin) use 48 volt systems with Alltrax controllers.

Thanks again for you help.

Terry Richards

CLUTCH DESIGN ON RENAULT GOES CLUTCHLESS

We are often questioned and sometimes even criticized for our clutchless design. Here's what one customer says ----- Please note EVA did not provide this clutch design.



Bob –

Got tired of the vibration of the clutch (system by others), so made this little adapter. Welded the clutch disk splined hub into a 2" steel bar that we bored and keyed to fit the motor shaft, faced it off, replaces the tapered coupling and flywheel and pressure plate and clutch disk and throwout bearing (22 lb). Probably could have made it from 1 3/4 bar stock, but had the 2" on hand. The adapter is 2 1/16" long overall. Setscrews / 1/4 sq keyed /bored for the 1 1/8" motor shaft. Also added a brass pilot bushing inside the motor shaft but not sure this is needed.

Angular momentum is tiny now, the thing has a lot more acceleration off the line, and I think it will coast to a stop quicker as well, make for quicker clutchless shifts, without all that steel spinning. No vibration. With the original contactors, maybe a clutch was needed, but with the controller, this is far better. I never used it anyway. Lot easier to take the motor in and out without the clutch and flywheel on it also.

**Jay &
Mike Domanski**

***BILL DINO
Princeton, MA
FORD RANGER***



The Ford Ranger has limited space under the bed – these batteries are in the bed.



Notice how Bill mounted components to the bottom of the Control Board.

Great Idea !

***FAIR HAVEN UNION HIGH SCHOOL
Fair Haven, VT***

Develops Hybrid and Builds Ground Up



Congratulations to the students and Joe Watkins, the Instructor !

ROB MATHIS
S-10 CONVERSION
Sandersville, GA



Engine Removal



*With our new 200lb lifts and 15 inch stroke
This bed allows easy access.*



Still used as a truck – brush is being loaded.

LARRY METALSKI
Elk Horn, WI

ELECTRIC BUMPER CAR



Did you have the correct answer?



Everyone loves this EV!

Hello Bob,

This is that guy "Larry" from Wisconsin. I've got to tell you that the bumper car turned out just amazing. It's quite a cute little dream machine, in fact that's what the cop said when she busted my daughter and I riding around in the parking lot across the road. The police officer thought it was brand new. This happened Fathers Day of all days. Fathers day is the day I finished the Lusse Auto Skooter. (spelled that way too)

You know Bob this car has been fun to build and also I've learned and experienced a ton of stuff. There has been times I've wanted to blow this sucker up. Now that we've driven in the Lusse we and others are going to have some big fun with it. Safe fun, even equipped with seat belts aboard.

*Thank you,
Larry Matelski*

AT EVA – WE HELP DREAMS COME TRUE!