

FOX VALLEY ELECTRIC AUTO ASSOCIATION NEWSLETTER FOR JULY, 2001

NEXT MEETING: Saturday July 21st at 9 AM in the Triton INDUSTRIAL CAREERS BUILDING, (East Campus), Room 108

DISCUSSION TOPICS: 1. Triton Project – transmission control & charger. 2. Open Topics.

MEMBERSHIP INFORMATION

Any person interested in electric cars is welcome to join the FVEAA. The cost for a full year's dues is \$ 20 which will entitle members to receive our monthly Newsletter that contains useful information about electric car conversions, construction, news, policies, and events. Membership is not required to attend our meetings. Dues for NEW members joining in July will be \$ 8.

To obtain info about the FVEAA you may contact either Past-President Ken Woods or President Shafer

Past President Ken Woods
1264 Harvest Court
Naperville, IL 60564-8956
(630) 420-1118
E-Mail: CasaZeus2@aol.com

President and Newsletter Editor Bill Shafer
1522 Clinton Place
River Forest, IL 60305-1208
(708) 771-5202
E-Mail: Assessorbill@cs.com

PRESEZ

The Triton Project will begin one hour after our meeting. This session will be devoted to the design and fabrication of the automatic transmission control for the project. Any FVEAA member is welcome to stay for the session.

On June 30-July 14th the U S Department of Energy will present a Solar Energy Independence Exhibit at the Museum of Science and Industry. On July 14th between 9:30 AM-5:30 PM. Our members may be interested in seeing the 1916-vintage Milburn electric cars that will be there, as well as 30 entries in the *American Solar Challenge Race* from Chicago-LA on Route 66. Admission is free. There will be no Triton Project class on this date.

On July 15th at 9:00 AM the contestants will start the race, with a car departing every minute. Watch for an announcement of the route and perhaps you can get a glimpse of them on Old 66 (Joliet Road).

I hope many of our members will attend this special event and look over the University entries. You should get some idea of how **not** to use solar energy for everyday transportation. Member Doug Mather has a practical solar system for his commuting.

BILL

Electric car for sale.

FVEAA member Ken Simmermon wants to sell the Emde-Hendricks 1971 Suburu conversion. Towing the vehicle in gear damaged the motor. It has a 72 volt system with 1-year old batteries and a Curtis 400-amp controller. It has a 25-mile range and excellent performance. He is asking \$ 1500 for the car and a replacement motor or \$ 2000 for the vehicle with the replacement motor installed. Ken's e-mail is junkman@iwc.net (1326 Cedar Lake Road, Lake Villa IL 60046)

MINUTES OF THE JUNE 16, 2001 MEETING

The meeting at Triton was called to order by President Shafer at 9:07 AM. Seven members attended. The minutes for the preceding meetings were approved. Treasurer Corel's report was accepted; the checking account contains \$ 2,660.42 and there is no change in the savings account.

Future EV exhibit opportunities were discussed. Fred Kitch will use his Ford Ranger for another float in the Riverside Independence parade. Bill Shafer and Net Gain will have *Bad Amplitude* and Kevin Zak's *electric chair* will participate.

President Shafer hopes to have at least two FVEAA conversions at the American Solar Challenge on July 14th. He is discussing this with Keith Gill, Transportation Curator at the Museum of Science and Industry. An opportunity charge while vehicles are on exhibit is essential if the cars are to make it home after the show closes at 5:30 PM.

A battery charger for the Triton Project Ranger was discussed. President Shafer asked Dale Corel and Ed Meyer to recommend a course of action for the FVEAA. After the meeting they reported a charger could be built for less cost than a commercial version charger with regulators for the 20 Optima batteries.

The meeting was adjourned at 10AM, at which time the Triton Project was convened.

From the notes of Bill Shafer

June 19, 2001

We welcome three new members of the FVEAA

Three persons read about the Triton Project from press releases and flyers and became FVEAA members. Please update your paid membership rosters as follows:

Dan Capobianco from Chicago (773) 777-9045. E-mail dcapo@concentric.net

Steve Grushas from La Grange (708) 579-9128. E-mail cgrushas@msn.com

Michael Johnson from Franklin Park (847) 451-1712. E-mail [mkjpnehg@home.com](mailto:mkipnehg@home.com)

All three pitched in enthusiastically with the conversion work.

Steve has acquired a 1981 Ford Escort from a seller in New Jersey after joining the FVEAA. He will be driving there to tow the vehicle back to La Grange and make it an operational electric car.

From other EV Newsletters and articles affecting EVs

The March-April issue of **Current Events, the publication of the national EAA**, cover story was about a two-passenger electric car that will be built in India. It is called the *REVA*. It is a 2-door hatchback. It uses eight 6-volt tubular lead-acid batteries in a 48-volt system. Vehicle price in US dollars is \$ 4300, but none will be sold in the US. Additional information is on the web at www.reviandia.com. There is also a web discussion list at http://geocities.com/reva_drivers_reva

The issue also has a technical article about ultracapacitors. These are being produced by Evans Capacitor Co. (www.evanscap.com) and by Maxwell (www.electroniccomponents.com).

The official program of the Northeastern Sustainable Energy Association's 2001 Tour de Sol is an informative document. The Event was held May 19-26.

There were five vehicles in the production category, six in the battery-powered demonstration class, eleven entrants in the battery electric group, and six in the one-person vehicle category. There were also a number of hybrid-electrics, fuel cell experimental cars, and miscellaneous vehicles.

The June issue of EV News on page 10 has an article reporting that the 10-year old United States Battery Consortium program is being phased out. It became apparent the goal of a lead-acid battery with a specific energy of 200 watt-hours per kg of battery by the year 2000 was unrealistic. There is now an increasing emphasis on hybrid-electric vehicles having other battery requirements. Beginning with fiscal year 2002 only \$ 3.5-million has been budgeted for an orderly shutdown.

In the same issue on page 12 is an article about 500 EVs ordered by the Postal Service. These will be used in California and will be the largest fleet of EVs in the US. Ford is making the vehicles. A future order for additional 1000 vans is likely. Electric vans are ideal for the postal service since each vehicle may have 300 stops per day.

The issue has several articles about hybrids and fuel cell cars. GM and the CEO of Ecostar, a new venture by Chrysler, gave optimistic evaluations of these vehicles. A lot of hybrid vehicle development funding is included in the 2002 Federal Budget. Also is included tax incentives for buying hybrids.

The issue has an article about an EV fire experienced by Patrick Chen, a member of the Ottawa EV group. He used a converted 1987 VW Jetta for most of his travel needs within the range capability of the vehicle. Between November 1st and the 27th of December he made 278 trips, accumulating 1300 km. The longest trip was 58 km. The car was given a "Saskatchewan winter test".

On November 14th he noticed battery heating above the recommended 20-25 degree C temperature. On December 27th he observed smoke coming from the heating vent so he turned off the fan. At home he was in the process of plugging in the car for recharging when he saw smoke coming from under the dashboard. Flames erupted when he opened the passenger side door. He opened the hood and there were flames there also. Time to call 911. The entire interior and about half of the exterior of the car was destroyed. The heat also melted some vinyl siding on this house. (For more information see the discussion contained in the May-June issue of *EV Circuit* which follows.)

From other EV Newsletters and articles affecting EVs - Continued

EV Circuit, the bi-monthly newsletter of the Ottawa Organization, notes that Member Etienne Gibeault bought the undamaged electrical components from the Chen fire and installed them in another Jetta. He found a vehicle having 280,000 km on the odometer but had a damaged head gasket that the owner didn't want to repair. Water also was leaking from the heater core but the owner continued to drive the car and add water. When Etienne started the conversion he found that gallons of water had soaked the carpets. The only problem Etienne now has is controller is overheating and going into the current-limiting mode now that hot weather has returned.

EVCO reports the Corbin *Sparrow* continues to have licensing trouble in Canada. It is classified as a motorcycle and road-legal in the US but Canadian motorcycle classification requires the driver to straddle the vehicle.

Solectria is changing its focus from being a seller of completed vehicles to now include sales of electric components it has developed. Solectria has teamed with Maxwell, the ultracapacitor manufacturer, to offer power systems incorporating this device. Test results indicate that capacitors can efficiently recapture braking energy and will improve a battery vehicle performance.

EVCO had an extensive account of the annual *Electrathon* the Organization sponsored.

DEVC, the Denver Group, in the June Newsletter, had many articles about hybrids, renewable energy, fuel cells for vehicles, and on-board gasoline reforming.

DEVC also reports that *Touchstone Energy* is sponsoring an improved version of the ER1 vehicle that competed in last year's July 4th *Race To The Clouds* to the summit of Pike's Peak. It completed 9 of the 12.42-mile run at 71 mph until the batteries were depleted.

They note that the Texas Department of Transportation has banned motorized scooters and skateboards from highway use since they are unable to meet registration and safety requirements. Since the vehicles are classed as motorized vehicles they are also banned from using sidewalks or park areas.

VEVA, the Vancouver Association in their June newsletter, reported on their annual **Ride Electric Vehicle** event. There were many electric vehicles exhibited and competing in races. It was interesting that an *electric tractor pull* was added this year. Rich Rudman attracted a lot of attention with his mini bike (MBH –Mini Bike from Hell). A mini-motor that was only 3.6 inches in diameter powered it. It also had Rich's mini-controller enclosed in an 8x8x4 inch box.

Twenty-one vehicles competed in an *Electrathon* event.

The following article about charging sealed lead-acid batteries was written by CL Scholefield of Energizer Power Systems and included in the VEGA June newsletter.

Sealed lead batteries when subjected to extended rest periods at a very low state of charge (below 1.81 volts per cell become sulfated. The chemical reactions that occur in the plates during discharge cause the conversion of lead dioxide and sponge lead to lead sulfate, an insulator. These crystals insulate active material from the current-collecting grid structure.

From other EV Newsletters and articles affecting EVs – Continued

When a constant charging current is introduced the initial voltage across a cell can exceed 5 volts depending on the charging current and voltage the charger delivers. The cell can appear defective.

If the cell has been allowed to self-discharge below 1.81 volts it is recommended that it be initially charged at a **low** rate (approximately 0.05 C) with a charger set for a no-load output voltage of 5 volts/cell for at least 24 hours. The low current is able, with time, to convert sulfate crystals back to good active material. As this happens the cell resistance is reduced and approaches the normal situation with a cell voltage of 2.3 volts. This regime should be followed by one or two normal charging cycles to restore the cell. If this is unsuccessful the battery must be replaced.

Sometimes **zapping** is used to “burn-out” a short in NiCad’s but this technique will not be successful for a sealed lead-acid battery.

Lerner Community Newspapers on June 21st carried the following article:

New Triton Course teaches conversion to electric car. Written by Staff Writer Laurie A DiBernardino (Article edited and photo omitted)

Bill Shafer finds himself getting just a bit smug when he lends an ear to people griping about rising gasoline prices. To him, have outlet - will travel.

Shafer is the President of the Fox Valley Electric Auto Association, an organization devoted to supporting, informing, and assisting persons interested in converting combustion-engine cars to electric cars that use rechargeable batteries.

Shafer also manages a new Course at Triton College, Electric Car Conversion. Students in this course, assisted by experienced FVEAAA members, learn about electric vehicle components and are transforming a 1996 Ford Ranger pickup truck to electric power during an 18-week course.

Shafer bought a 1980 Mazda RX-7 with a blown engine in 1990 for \$ 300 in 1990 and converted it into an electrically powered car that still rides high. The car reaches 65 mph and travels 30 miles on a charge. The cost for conversion: \$8000

Annual cost for the Mazda is about 1/3 that for a conventional auto used for urban travel. The car has twelve batteries that require minimum attention. Once a month he adds a small amount of distilled water to each cell and gives the batteries an equalizing charge

“It takes about ½ kilowatt hour a mile and that’s about four cents worth of electricity”, Shafer said. “The conversion process is not difficult. We even had an insurance agent convert a car”, Shafer said

Shafer uses his Mazda for short trips. He backs his Mazda into his garage, takes about five seconds to plug it in and keeps it ready to go. This extends the life of Honda, which he uses for longer trips.

His connection to ComEd is a standard 15-amp, 120-volt circuit supplies an on-board charger. He points out his car is 75% nuclear powered, 22% coal-fired and 2% natural gas according to ComEd’s latest Environmental Disclosure Statement.

From other EV Newsletters and articles affecting EVs – Concluded

”The process is not difficult. We even had an insurance agent convert a car”, Shafer said. A novice can expect to complete a project in about 6 months, working several times a week. Some specialized contract work is required for adapting an electric motor connection to an existing standard transmission and for building battery boxes.

The School has budgeted \$ 10,800 to pay for the pickup truck conversion. A \$4000 rebate for electric cars is available from the Illinois EPA Clean Cities Fleet Program.

Shafer feels that most persons reject electric cars because of their range handicap. “ The key is to change thinking about EVs. Use an EV where it is appropriate for the trip. Use your IC engine car for other occasions. It’s no different than your toolbox, When you want to drive a nail you use a hammer, not a pair of pliers,” he observed. He concluded by saying ”Don’t hold your breath waiting for Detroit to offer commercial electric cars. They have decided to develop hybrid cars,”

“Besides being environmentally friendly and saving you money, electric cars are durable because there is nothing to wear out,” Shafer noted. Said. He continued, “You are substituting a simple electric motor for a very complicated internal combustion engine”..

The August issue CAR And DRIVER magazine had an informative article on page 97 about a transportation experiment they conducted. They asked, What’s the quickest way and most sensible way to get from Washington to New York City? The compared four methods, Amtrak’s high-speed train, the Acela, fly an Airbus commuter airplane, take a Greyhound bus, or drive a Honda hybrid Insight.

The results are summarized in the following table:

Travel Mode	Time, hr-min	Cost	Fuel – Gallons	Emissions – Pounds per passenger			
				CO 2	CO	NOx	HC
Airbus	3:27	\$ 181	6.44/passenger	128	0.24	0.53	0.03
Train	3.31	158	9.46	357	0	0.89	0
Honda	3:59	107	4.83	51	0.04	0.11	0
Bus	5:44	60	0.74	15	0.02	0.12	0.

Notes:

1. Coal-fired power plants generated the electricity for the train. Fuel consumption expressed in equivalent gallons @ 114,000 BTU/gallons.
2. Honda and bus emissions based on EPA test data.
3. Aircraft emissions from Civil Aviation Exhaust Emissions Data Bank.
4. Honda cost includes \$ 0.36 per-mile cost of ownership for insurance, maintenance and depreciation based on a 4-year life and 48,000 miles of travel.
5. All travel modes except the Honda used a taxi for part of their trips. Cost and emission data for a Crown Victoria cab use is included in this table. Omitted is the cost of coffee and danish. The original data includes time available during travel for work or reading.

Car & Driver conclusions; On the basis of cost, convenience, and comfort – all critical components of travel – our experience offered no clear-cut conclusion. Including environmental factors made the choices even tougher. It seems the plane versus train versus the highway debate will continue over distances greater than 300 miles.

Editor’s note – buy the magazine and read the entire article.