

# FVEAA NEWSLETTER

June 1994

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## NEXT MEETING - June 17 at 7:30 PM

Will be in Room 1046 in the Student Resource Center at  
the College of DuPage, southeast corner of 22nd Street & Lambert Road

DISCUSSION TOPIC - Can a recycled, converted EV help you avoid the  
consequences of mandated Employee Trip Reduction (CTR) requirements?

### MEMBERSHIP INFORMATION

Any person interested in electric cars is welcome to join the FVEAA. The cost for a full year's dues is \$15 which will entitle the member to receive our monthly Newsletter which contains useful information about electric car components, construction, policies, and events. Dues for new members joining in July will be \$ 5.00

## NEWSLETTER

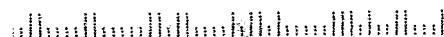
FOX VALLEY ELECTRIC AUTO ASSOCIATION  
308 South East Avenue  
Oak Park, Illinois 60302



**First Class**

John Emde  
6542 Fairmount Avenue  
Downers Grove IL 60516 -2919

**ADDRESS CORRECTION REQUESTED**



## MINUTES OF MAY 21 MEETING

The call to order was delayed until 8:40 due to members inspection of VALPO Escort which Professor Bohlmann towed to the meeting. This conversion recycled a 400-amp aircraft-style generator and power transistor controller used by Member Bill Shafer. Six 12-volt GelCell batteries are used for the 72-volt system. Recharging these units is difficult because no water is added during equalizing charge. In first gear the car will move at 35 mph. More testing and improvements to the system is planned.

Last month's newsletter speculated that the power transistor failure was attributed to failure to properly balance the individual units for proper parallel operation. Further investigation revealed the failure cause was the inadvertent connection of the 12 volt lead to the power cell.

The meeting was called to order at 8:40 by President Woods. Twenty one members and two guests attended.

Treasurer Corel reported \$ 1134.81 in the checking and \$ 2106.62 in the savings accounts. Expenditures included \$ 178.53 for two issues of the Newsletter and \$ 40 to retrieve the FVEAA Design Competition entry.

The FVEAA proposal for testing the ComEd ECOSTAR has been sent to John Maxon. No reply has been received.

FVEAA was represented at Steinmetz High School for Earth Day activities. Member Helenowska arranged presentations to three assembly groups. Members Woods and Shafer participated. The event was concluded by loading aluminum cans into Member Tilton's electric van which was

labeled the "STEINMETZ ECOVAN" in recognition of the event. President Woods gave an evening presentation to an Aurora church group.

Ken Meyers "Volunteered" to become the FVEAA registered agent in order to keep the official address in Kane County.

Information on the GM IMPACT can be obtained by calling 1-800-253-5328 or writing to GM Electric Vehicles, 431 N Saginaw, Flint MI 48502-9922..

The scheduled discussion topic was postponed to the June meeting due to the time spent examining the VALPO Escort.

If anyone want to convert a Porsche Charlie Cilley has one available. Call him at (708) 668-1430 if you are interested.

The meeting was adjourned at 9:40 with the remainder of the time spent used for individual discussions between members.

Submitted by,

Dave Aarvold  
Secretary

### PRESSEZ

We plan to recycle the May meeting topic for our June meeting. I think it is important that our members become informed about the measures proposed to comply with requirements of the 1990 update of the Clean Air Act. These could seriously affect a lot of suburban residents.

KEN

## RECENT EV ARTICLES

I only noted two EV articles during the past month, and no FVEAA members provided articles they had read so this issue contains only a review of these two. If you see an EV article, please send it to me so it can be shared with your fellow FVEAA members - Editor.

### PROTOTYPE EV'S

HERE COMES THE SUNGO: OMNI May, 1994 Page 20 (By Jeffrey Zygmunt)

This article is a report on a test drive of the Sungo, a solar-powered car built at the University of New Hampshire, which placed second in the 1994 Tour-de-Sol. In the article the writer noted that he expected a serene, simple, direct association between energy and motive power. What he experienced was something entirely different. The eggcrate-thin fiberglass body shell didn't prove much isolation from road noise. The go-cart seats suspended him just inches above the road surface. The drive belts whirred and roared. Turning corners was an adventure. The shortcomings of the SUNGO are common to all solar-powered experimental cars. He points out that the maximum incoming solar radiation is about 1 Kwh/square meter. Solar cells and batteries only convert about 10% of this energy to useful motive power. He concludes that solar power will probably be limited to providing energy for the amenities the consumer now enjoys in conventional cars.

ELECTRIC CARS - ARE THEY THE FUTURE? Business Week May 30, 1994 Pages 110-114

This was the cover story of the issue that asks the question, "Will they work? And Who will buy them? David Woodruff, one of the authors, starts the story with his experiences in driving a Ford ECOSTAR the 470 miles between Venice Beach (South of Los Angeles) to Sacramento. He acknowledges that EV's do not have the capability to make this kind of trip non-stop.

He believes that the production schedules of major carmakers are now locking in their 1998 designs this year, so the ECOSTAR is expected to resemble the prototypes in operation today. Even with the use of new technology that includes AC motors, composites, and available batteries the 1998 cars will be limited to short-range use. (This is something the FVEAA recognized a long time ago - Editor)

He notes that various entrepreneurs are hoping to steal a march on Detroit while the major carmakers grumble over regulations requiring Zero-Emission Vehicles (ZEV) by 1998. Companies such as US Electricar in California and Solectria in Mass. are building conversions to fill the rising demand for EVs. These companies, unburdened by traditional notions of what cars are for, are finding that an EV can be a successful "niche" product. Eventually the major carmakers may buy out these companies to supply the required quota of 2% ZEV sales by 1998.

He observes that GM probably rues the day they publicly announced plans in 1990 to commercially produce the IMPACT. GM marketers concluded that the IMPACT wouldn't sell: it was too small, too costly, and would only travel about 80 miles on a single charge. GM

Consultant, Sierra Research, concluded from their study that the first years of production EVs would cost \$ 21,000 **MORE** to manufacture than gasoline vehicles. Sierra further reported that conversions of gasoline cars would cost about \$ 5,000 more. Chrysler estimates that with an annual volume of 300,000 cars it could make EVs, (MINUS BATTERIES) for about \$ 5,000 more. Chrysler abandoned plans to build its next minivan, the DESTINY, available in gasoline, electric, and natural gas versions.

He concludes the story that he believes that EVs will ultimately make it somehow.

An accompanying article on "The not-so-big wheels leading the charge" lists the following EV startup companies:

AC Propulsion - San Dimas California has 6 employees and a 1993 revenue of \$ 700,000.

Renaissance Cars Inc - Palm Bay Florida builds the 2-seater Tropicana has 26 employees and no 93 revenue. Bob Beaumont who built 2.253 Citicars in the 70's is president of this company.

Rosen Motors - Los Angeles California is a new start up. No employees and no 93 revenue.

Solectria Corp - Arlington Mass. converts Prizm's Metro's and Chevy S-10 pickups. James Worden, the president won the Phoenix 500. The company has 25 employees and 93 revenues of \$ 2-million.

US Electricar - San Sebastol, California also converts the same cars as Solectria, gas 226 employees and had 93 revenues of \$ 900,000.

Unique Mobility, INC - Golden Colorado. Has developed and sells EV components to others which include BMW and Ford. It has 45 employees and 93 revenues of \$ 2.3 million.

## EEvents

**Saturn HEV Challenge - June 14-20 Southfield Michigan. (Intercollegiate competition)**  
Bob Larson - DOE (708) 252-3735 or Nicole Hill (708) 252-6574

**Cleveland Grand Prix - July 8-10 at Burke Lakefront Airport (Grand Prix - Lightning)**  
Kevon Makell, Centerior Energy Company, (216) 447-3552 or SEER (602) 953-6672.

**S/EV 94 October 3-5 - Providence RI (Solar & EV Symposium)**  
(413) 774-6051

**EVS-12 - Anaheim Convention Center (12th Biennial International Symposium)**  
SHO (Electric Power Research Institute) 167 South San Antonio Rd, # 10, Los Altos CA 94022 (415) 949-2050

## FROM OTHER EV NEWSLETTERS

**Vancouver Electric Vehicle Association (VEVA)** continues with plans to sponsor an Electrathon event. Glenn Houston presented a prototype frame that is about 100 inches long, 39 inches high, with a track of 38 inches and a 56 inch wheelbase and 4 inches of ground clearance. The rear wheel is a 20-inch, 38-spoke BMX mountain bike unit with a go-cart sprocket suitable for a # 30 chain. The front wheels are also 20-inch BMX units. The restoration of a 1912 Detroit Electric is now down to finishing the upholstery. This car is expected to be used in the group's 1994 activities. They report there will be a 1995 Hybrid Electric Vehicle (HEV) challenge sponsored by Chrysler. Each university participant will be given a 1995 NEON for conversion.

**Electric Vehicle Council of Ottawa (EVCO)** reported on the conversion of a Fiero by two of their members. This car has been considered too heavy to convert but the builders identified several overriding advantages including; low & wide track giving stability, batteries located outside the passenger compartment, power disc brakes, and plastic exterior panels resistant to rust. The conversion used a 9-inch Advanced DC motor. The Fiero was purchased for \$ 1500 , the motor cost was \$ 2000, the Curtis controller and potbox was \$ 1200, contactors cost \$ 325, the charger was \$ 1300, a dc-dc converter was \$ 700, a vacuum pump was \$ 450, batteries and boxes ran \$ 1500, cables were \$ 300, and miscellaneous equipment cost \$ 1000. With 15% tax on these materials, they report the total conversion cost was \$ 12,000.

They also report that Zutter Electric Vehicles, formerly SWISSMOBILE, plans to sell the SILENZIO developed by a Swiss aluminum firm and a Czech truck manufacturer. Canadian retail price was announced to be \$ 25,000.

**WORLD ELECTRIC TRANSPORTATION (WET)** in the May issue reported that U S Electricar had received two grants for California cities for funding an on-the-job training program for converting EVs at their production facility in South Central Los Angeles. The issue also extensively covered the ALUPOWER battery system that features an externally stored electrolyte system and Westinghouse bi-polar Lithium Metal Sulfide batteries that should be able to triple the single charge range for an EV. WET also reports good progress with the Ballard Fuel Cell system which will be tested by Mercedes-Benz in Stuttgart.

**The Aussies ( AEVA)** reported that November 26th will see the most unlikely collection of race cars that will include bicycles, tricycles, city cars, family cars, trucks, buses, solar and battery vehicles to see which one least affects the environment. Entries in the Energy Challenge will be tested by a rating systems that uses the Greenhouse Gas Index (GGI) developed by John Ward of the technical department of NRMA. The issue also has a good description of the Hughes (GM) inductive charger. They also provided some details on VW's CONCEPT 1 that will be available in gasoline, diesel, and electric versions. The electric drive uses a Siemens AC induction motor that sends 37Kw to the drive wheels. The battery is a sodium-nickel-chloride unit weighing 250Kg and is operated at 300 C. The overall weight of the electric version is 1200 Kg (2640 lbs). The diesel version weight is 970 Kg.

## FROM OTHER EV NEWSLETTERS (CONTINUED)

**SACRAMENTO EV ASSN. (SEVA)** has been reorganized with new officers and a rejuvenated Newsletter. We received their March, April, May, and June issues. The Solar Energy International (SEI) is offering a 1-week class in conversions Aug 1-5 at their headquarters in Carbondale, Colorado (About 30 miles from Aspen). This is a new venture for SEI. For information call SEI at (303) 963-8855 and ask to speak to John Weiss. In the May issue, they reported the Los Angeles Grand Prix was a bust with none of the 7 cars entered able to go to the starting line after trying the 5 qualifying laps. This was witnessed by about 100,000 persons and was a pr setback for Evs. SEVA member Scott Johnson reported on his use of a 1980 Jet Electricia model 007 since purchasing it in August of 1993. In less than one year he has driven the car 4000 miles and it has become his main transportation for both work and pleasure driving. If you want to talk to Scott about his experiences, his phone # is (916) 878-1566. SEVA member Scott Perry reported the energy to travel one mile is:

Bicycle - 50 Wh, Citicar - 225, Toyota Camry-1100, Dodge Caravan - 1659 Wh.

## THE ECONOMICS OF REGENERATIVE BRAKING

From time-to-time the subject of regenerative braking is raised. Various systems have been proposed to capture the kinetic energy of motion and reapply it to the next acceleration. Flywheels, electronic systems that turn motors into generators, hydraulic accumulators, even spring-winding systems have been suggested.

The energy that can be captured have been determined by testing various systems. When the efficiency of the regenerative system in returning the kinetic energy to the car's propulsion is factored in, the recapture range has been found to be 5-10% of the total energy used by the vehicle.

FVEAA conversion vehicles have been metered for ac energy input. The input has been found to be 0.5-1.0 Kwh/mile of driving. If we assume an average of 0.7 Kwh/mile as an average figure and further assume the converted vehicle is annually driven 2000 miles, the annual energy input is 1400 Kwh. ComEd's current summer residential rate is 0.07633 cents/Kwh. This makes the annual electricity cost for an EV without regeneration:  $(0.7)(0.07633)(2000) = \$ 106.86$ .

The annual savings in energy cost by adding regenerative braking would amount to about \$ 10 if the most-optimistic recapture rate of 10% is assumed. There is a lot to be said for the standard braking system.

## ABOUT THIS ISSUE

There are two pages missing from this issue due to my hospitalization for a hernia repair last month. These are usually devoted to a technical topic and will reappear in July. I will probably have to build a hoist when it comes time to replace the 12 batteries in my Mazda next year; or should it become a club-owned device?

Bill