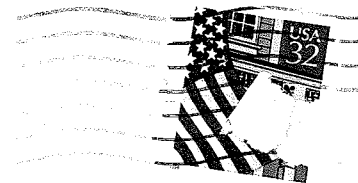


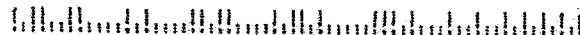
**Fox Valley Electric Auto Association
1522 Clinton Place
River Forest, IL 60305-1208**



John Emde
6542 Fairmount Avenue
Downers Grove IL 60516 -2919

Address Correction Requested

60316+2919



NEXT MEETING: Friday, November 21 at 7:30 PM in Room K-161 at The College of Dupage SW Corner of 22nd Street & Lambert Road in Glen Ellen.

**DISCUSSION TOPICS - 1. Future Car Challenge presentation (For sure this time).
2. Election of officers for 1998.**

MEMBERSHIP INFORMATION

Any person interested in electric cars is welcome to join the FVEAA. The cost for a full year's dues is \$20 that will entitle the member to receive our monthly Newsletter that contains useful information about electric car components, construction, policies and events.

To obtain information about the FVEAA, you may contact either President Woods or Vice President Shafer:

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

Vice President & Editor - Bill Shafer
1522 Clinton Place
River Forest, IL 60305-1208
(708) 771-5202
E-mail electricbill@compuserve.com

NOVEMBER 1997 PRESSEZ

The election of FVEAA officers and directors for 1998 will be the first item on the agenda at the next meeting. All present officers have agreed to serve another term.

The speaker will be Bob Larson from Argonne National Laboratory. He is to include technical details of the Toyota hybrid electric vehicle. Also the results of the 1997 Future Car Challenge held in June as well as some details of the two fuel cells of Mercedes-Benz that is to be included in the 1998 Future Car Challenge. This should be an interesting program.

Remember that November starts a new year for dues. Please remit \$20.00 to our treasurer Dale Corel for the new year.

Ken

OCTOBER MEETING MINUTES

The meeting at the College of DuPage was called to order by President Woods at 7:35. Fourteen members and two guests attended

The minutes were approved. Treasurer Corel reported \$ 1622.49 in the checking account, no change in the savings account, for a total of \$ 3844.91. This report was approved.

Ken Woods reported there would be a solar house tour tomorrow. He distributed copies of the Illinois Solar Association's Newsletter, the Heliograph, that had pictures and house locations.

Members approved a resolution granting members who have donated their Participation share to the club a paid-up 1998 membership. Two members, Ben Schmid and L.J. Obiyala, have donated their shares.

Members Mock and Meyer reported on the battery charger installation in George Krajanovich's Omni conversion project. Ed Meyer is now up to Version 7 of his battery charger design. The charger draws about 12 amps on a 120-volt supply circuit to charge the 96 volt battery pack. The control circuit turns on a bi-directional triac at a set point on the voltage wave. It is turned off at higher set point to select a segment of the voltage ac wave. Programmable resistors are used to determine turn-on and turn-off points. Operation is bi-directional so charging takes place on both the positive and negative segments of the incoming voltage. Additional improvements are needed to correct the resulting charger waveform that is filled with higher-frequency harmonics. The dc output cannot be read with a digital voltmeter.

Member Steve Leisner brought a description of a zinc-air battery system used in a purpose-built BAT vehicle to achieve a 1000 mile range on a single charge. (Editor's note - the car was driven on a test track for this test with a battery 4-amp constant discharge)

President Woods announced tonight's speaker cancelled at the last minute. The program on the Future Car Challenge will definitely be presented at the November meeting and will include information on the Argonne's fuel cell work.

Three future program topics were suggested during a discussion: 1) Someone from either Argonne or the CTA on fuel cell application tests for electric buses. 2) Mr Ohba from Soleq on his work with Unique Mobility for bicycle applications 3) Bob Mckee from his engineering firm for an updating on his EV work. President Woods will follow up.

Member Mock needs a flexible coupling to connect two aircraft-type starter-generators for back-to-back load testing his controller.

There was a lengthy, and somewhat amusing, discussion of a hands-off coupling system to automatically connect a charger to an ac supply circuit in a garage.

President Woods reminded the members that selection of 1998 officers for the FVEAA would take place in November.

The meeting was adjourned at 10:07.

Submitted by
Secretary Dave Aarvold

RECENT ARTICLES ABOUT ELECTRIC VEHICLES

Battery-charging technology cuts charging time for all battery types. Electronic Products, September 1997, P-24. Advanced Charger Technology, a Norcross GA firm, has patented a technology that can recharge a cellular phone battery in as little as five minutes. It can handle NiCads, NiMH, and lithium ion battery types. The key development is analyzing the battery electrochemical state during charging and adjusting the charger's waveform to optimize charger efficiency. It avoids overheating and consequential damage. NiMH batteries have been charged under test conditions in 26 minutes, compared with the 3-4 hours required with conventional techniques. Additional information is available at E-mail address: mkg@advchgtech.com.

Electric cars get boost in New York with new law. MFR News, October, 1997. A New York District judge issued a ruling in August that upholds a NY requirement that 2% of 1998 cars sold or leased must have zero emissions. This is similar to the original California mandate that was modified by CA. NY State officials estimate that 7800 electric vehicles will be required. The NY Law specifies a \$ 10,000 fine per violation.

Power Play. Electric car to undergo far-ranging change. Chicago Tribune 9/28/97 Transportation Section, P-24H. The first factory-built electric vehicles are selling slowly, just as did the first personal computers. Car companies are facing the question whether new batteries that increase travel range but come at a higher price will be effective in stimulating the market. NiMH batteries that will double the car range are beginning to show up in an EV offered by Honda, who is swallowing the extra cost for the advanced battery used in its EV Plus.

Carmakers seek new lease on electrics with consumers. Chicago Tribune 9/28/97. Automakers are planning to assume part of the monthly lease cost for EVs to stimulate demand. Present EVs leasing for \$ 400 to \$ 550/month are meeting consumer resistance. There currently are an estimated 4000 electric cars in use throughout the nation, most are converted conventional cars built by individuals. GM has leased 230 this year. Since May, Honda has leased 40 of their EV Plus equipped with a NiMH battery. A Ford manager observed, "There isn't going to be a miracle battery. If we get 100 miles in real-world driving that's awe-inspiring. And that's where it is going to stop for a long, long time."

Chicago drives to a cleaner future with electric bus. Chicago Sun-Times 9/17, 1997, Page 23. Three electric buses are being tested by the Chicago Transit Authority (CTA). They were supplied by Ballard Power Systems, a company that is developing fuel cells for the application. A commercial version of the bus is expected to sell for five times the \$ 280,000 for a conventional diesel bus and the hydrogen fuel will cost twice as much per mile as a diesel vehicle. The three buses are scheduled to operate on routes on Madison Street, Grand Avenue, and Chicago Avenue. The CTA has an option to purchase 200,000 shares of stock in the company.

RECENT ARTICLES ABOUT ELECTRIC VEHICLES - Continued

Swatch for this car. *Chicago Tribune 6/30/97, Transportation Section, Page 7.* The Swatch car, a joint venture between Mercedes-Benz and a Swiss watchmaker will become available in March of 1998. The 2-passenger vehicle will carry a base price of about \$ 9500. An electric or hybrid version is expected to follow.

The road to the future. *Chicago Sun-Times 10/15/97* carried a photo of the Prius, Toyota's hybrid car. The 4-passenger car will be sold in Japan for about \$ 17,500 and may appear in the US about six months later.

Fuel cells could power electric car. *Chicago Sun-Times 10/22/97, Page 7.* Energy Secretary Frederico Pena at a news conference hailed a breakthrough made by an Arthur D Little Consultants that came up with a fuel cell that produces energy by combining oxygen and hydrogen derived from gasoline. It may become commercially available by the year 2005. Remaining challenges are to reduce the \$ 30,000 estimated cost even in commercial production quantities, reducing equipment size to fit in a car, and developing more power than the laboratory model. Chrysler is also working on the gasoline-to-hydrogen concept. (Editor's note - the conference was also featured in TV news broadcasts. Don't hold your breath waiting for this development).

Electric Vehicles Gear Up. *Chemical & Engineering News, October 13, 1997, Page 18.* Environmental improvement from the widespread use of electric cars is based on shifting emissions out of urban areas to the electric utility where it can be dealt with by a centralized system. Current efforts are being largely motivated by California requirements that have also been adopted by New York and Mass. Seven auto manufacturers, three in the US and Honda, Toyota, Nissan, and Mazda in Japan. have based their initial EV offerings on lead-acid batteries that deliver ranges about 30 miles in real-world driving conditions.

Other battery systems that deliver greater driving range have been tested. NiMH batteries double the range to 70 miles, European manufacturers have tried expensive nicads and exchangeable zinc-air units. Sodium-nickel and lithium-ion (Lion) batteries offer yet other possibilities. Cost is the biggest problem for these approaches. According to the article, lead-acid batteries today cost about \$ 100-200/kWh, NiMH are triple this amount, nicads sell for about \$ 500, and Lion batteries at about the same cost as lead-acid. (Editor's note - the standard GC-2 golf-cart deep-discharge battery commonly used in electric vehicle conversions holds about 1.5 kWh of energy - 75 amps for 105 minutes @ 6 volts = 1.5 kWh - and can be purchased for about \$ 50) Lion batteries use lithium as the anode and compounds such as titanium or molybdenum disulfide as the cathode. The electrolyte in Lion batteries is a lithium salt such as lithium hexafluoroarsenate. This material could cause recycling problems. 3M company has been working on a Lion battery with a polymer plastic solid electrolyte.

RECENT ARTICLES ABOUT ELECTRIC VEHICLES - Concluded

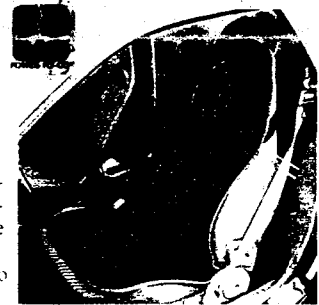
The competition for electric cars in emission reduction is provided by new internal combustion engines. Honda recently announced that within two years, it will have an engine that is essentially emission-free. They accomplish this with a new catalytic converter system. Another approach to making electric cars more acceptable involves opportunity charging. This involves plugging in an electric car for a charge whenever possible. Aerovironment, the designer of the EV1 prototype, has developed a charger that recharges lead-acid batteries to 80% of their normal capacity in just 20 minutes. (See Editor's comment about quick recharging in the preceding article on this technique).

SOMETHING FOR EV OWNERS WHO WANT TO USE THEIR CARS DURING THE WINTER

To the right is a copy of an ad taken from a catalog by Heartland America, a mail-order firm at 6978 Shady Oak Road in Eden Prairie, Minnesota 66344-3453. Don't forget that low temperatures will severely reduce lead-acid battery energy storage capability.

THE FINEST LUXURY CARS HAVE HEATED SEATS FOR THE ULTIMATE IN COMFORT — NOW YOURS CAN!

Imagine sitting in your car on a cold winter morning and being instantly cradled in warmth. This Heated Seat Cushion has a unique design that provides full body contour and lumbar support plus an internal thermostat that automatically regulates temperature for the ultimate in driving comfort. Simply use the unique strapping system to secure it to your seat and plug it into your 12V lighter socket. It's 48" x 22" size fits most seats. U.L. approved power cord (incl.). 90 day Limited Warranty



Mfg. Sugg. Retail \$49.95
OUR PRICE \$29.99
No. LB-6226 Sep 86 95

1-800-229-2901
24 HOURS A DAY

FROM OTHER EV NEWSLETTERS

AVEA, The Australian Electric Vehicle Association, in their Sept/Oct Newsletter featured a front-page story on an unusual new electric vehicle race, called "Citipower Sunrace 98". It will be a 1733 km, 7-day event starting in Sydney, going through Canberra, and ending in Melbourne. Race dates are Jan 16-28, 1998. The major objective is to demonstrate vehicles that will minimize emissions. Information on the event may be obtained from the Web: www.sunrace.netlink.com There is also an interesting story about a conversion carried out by Bondigo Senior Secondary College in Victoria. Hank Scudder in Los Angeles was a Web story about his GM EV1 driving experience that can be accessed at: www.HJSCUDDER@RDYNE.BNA.BOIENG.COM The issue also has a page devoted to EV opinions where 12 subjects may be found.

Electric Grand Prix Corp. in Rochester, NY reports the 1240-mile Sunrace 97 event sponsored by DOE and GM was won by Solar Eagle, an entry from Cal State in Los Angeles. There were 33 entries. Solar Eagle won by 19 minutes over the second-place car from MIT. The issue also has Newsnotes from CALSTART that cover 21 subjects related to EVs.

EV NEWS September issue notes that Solectria has reached an agreement that will allow some EV components to be manufactured in China by GPE Industries, a major supplier to some Japanese auto manufacturers. Opposite Page 4 is a striking ad for Tom Corbin's SPARROW, a one-person 3-wheeled commuter car classed as a motorcycle (with 100% occupancy).

FROM OTHER EV NEWSLETTERS- Concluded

Ohio State's "Smokin' Buckeye" won the Cleveland race with a fastest lap speed of 86.177 mph. The September race at the Indy Track was canceled due to resurfacing work on the track.

There was an article on the interesting little vehicle, the GIZMO. It is a 3-wheel, 750-pound, \$ 7000 EV built in Eugene OR by Neighborhood Electric Vehicle Company (NEVCO).

Mike Bianchi had a particularly interesting interview with EV pioneer, Howard Wilson, retired from GM's Hughes Division. He stated, "The people...are not comparing new EVs with a new Escort. They are comparing them with their 5-year old Honda that is likely used as a commuter vehicle. The EV..... is up against a car that may be worth only \$ 4000 to \$ 5,000. He continued, "My idea for the marketers is to promote the idea that the car you use the most of the time, everyday driving back-and-forth, and the one you take out to social events, ought to be a new, nice car".

The October issue of EV News, the Executive Report, had an article saying that Ovonic (the US NiMH battery company) had won its patent dispute with Japanese battery manufacturers. It's patents on the NiMH battery have been upheld by a Japanese court. In another article, Ovonic stated it has succeeded in reducing the cost of NiMH batteries to \$ 2000/kW. Further reductions are expected as production increases.

The issue's feature article is about the new application of fuel cells by Mercedes-Benz. The first second test vehicle used a hydride-based storage system located in cylinders on top of a van. This was an impractical arrangement for cars. The new system uses methanol as the fuel. The NECAR 3 demonstration vehicle is a 4-door car. It has an 11-gallon methanol tank and an 18" high reformer that extracts hydrogen from the fuel. (Editor's note. Methanol is a better fuel than gasoline because methanol is much richer in hydrogen, necessary for the fuel cell operation.) The NECAR's range is 250 miles. Efficiency is 22 mpg. The fuel cell system is supplied by Ballard Power Systems, a Canadian company.

There is also an article about Lee Iaccoca's involvement with Unique Mobility, a supplier of electrical components for scooters and bicycles. Unique has a combined venture with Italian car designer Pininfarina to develop a small 4-passenger commuter car, the ETHOS 3. Iaccoca said, "This is the best electric car I have ever driven."

VEVA, the active Vancouver group in their October Newsletter described how member Bill Glazier is planning to install his CVT drive in British ENFIELD that the club donated to him. They also report that Hydro-Quebec has acquired three partners to develop their M4, electric-wheel-motor invention. So far \$ 44-million has been spent. The Hyundai electric car development, the ATOS, is described. It is a 5-passenger, 2585 pound vehicle using NiMH batteries with a 120-mile range and an 80 mph top speed capability. The ac-induction motor has a 50 kW rating.

FINAL BALANCE SHEET FOR FYEAA NISSAN CONVERSION PROJECT

Report Date 10/17/1997 Page 1/2

Expense Item	Amount	Owned or Donated	Income Item	Amount
Car Purchase	\$ 550		Engine Sale	\$ 120
Tow Bar	75		Participation Shares	4700
Repair Body Rust	40		Treasury Transfer	2000
Buff & Polish Paint	160			
DC Motor	1654			
Controller	1045			
Trial Battery	100	Note 1		
Charger		\$575 (E. Meyer)		
Suspension Upgrade	143			
Adapter Plate	114.66			
Machining Plate	200			
Keyway broach	51.55			
Steel hub	320			
Lifting eyebolt	4.10			
Misc nuts & bolts	19.63			
Misc fasteners	34.24			
2/0 power cable	48			
Clutch disc	32.59			
Steering wheel	50			
Motor mount	24.70			
Machining mounts	40			
Subtotal (Page 1)	4706.47	575		6820

FINAL BALANCE SHEET FOR NISSAN CONVERSION PROJECT

Report Date 10/17/1997 Page 2/2

Expense Item	Amount	Owned or Donated	Income Item	Amount
Subtotal from P 1	\$ 4706.47	\$ 575		\$ 6820
Wiring Materials	11.81			
Misc mount material	14			
Vacuum brake pump	20			
Wheel Covers	19.95			
Subtotal Materials	\$ 4772.23			
Master Relay		\$ 130 (D. Mock)		
Circuit Breaker		125 (D. Corel)		
Pot Box		65 (D. Mock)		
Aux Battery		60 (Owned)		
Aux Power Source		420 (K. Meyers)		
Electrical meters		164 (Owned)		
Subtotal Donated		\$ 1539		
Title Transfer Fee	90			
License & Title	34			
Insurance (1/2 Year)	130.93			
Subtotal Licensing	\$ 254.93			
Total Disbursements	\$ 5027.16		Funds Raised	\$ 6820
Project Total Cost	\$ 6566.16		Credit Vehicle Sale	(4500)
Original Estimate	\$ 7000		Back to Treasury	\$ 2320

Note 1. Original estimate included \$ 800 for sixteen 6-volt GC-2 deep discharge batteries that were not installed. Also not shown is the market value for thirty 12-volt gelcells used for the project and furnished by Dale Corel for a nominal \$ 100.

Note 2. Prices for donated items were taken from KTA Services 1997 catalog.

LATE NEWS

The last FVEAA Newsletter in an article titled "ELECTRIC BIKE STUFF" described The EV WARRIOR. You can disregard the WARRIOR because the wheels came off the venture and the company now is in Chapter 7 bankruptcy. This is the third failure of a Malcom Bricklin enterprise. Preceding this was the ill-fated Bricklin auto with its gull wing doors and stainless steel finish.

EDITORIAL

Rapid charging for electric vehicles. There have been many recent articles on quick-charging of batteries, ranging from cell phones to the Posicharge system designed to recharge an electric vehicle in 20 minutes. There is no particular problem with utility electricity supply for rapid charging of a cell phone-sized battery. It is entirely another matter when charging demand is scaled up to the Posicharge capacity.

Assume that an EV battery can store 15 kWh of electrical energy and that charging efficiency is 90%. Charging in 20 minutes (1/3 of an hour) will produce an electrical demand of 50 kW. The supply capability of a 20-amp, 120-volt circuit loaded according to the electrical code is about 2 kW. A 30-amp, 240-volt supply circuit for an electric dryer has a capacity of 5.75 kW. A 50-amp 240-volt supply circuit for an electric range has a capacity of about 10 kW. A 50-kw demand will require a three-phase supply, not a circuit that is found in the usual residence.

The economics of the supply circuit must be considered. EV battery charging has a low energy consumption and high demand. It is the type of load that electric utilities hate. Demand can be equated with capital investment and energy consumption with profit. The FVEAA, in its entry for the Electric Vehicle and the American Community competition in 1993, noted that a single gasoline pump, delivering 3-4 gallons of fuel per minute represents a demand equivalent of 8500kw, equal to the power of a small substation. Quick-charging, locations will require some entity to supply the capital needed for the supply. It is not likely to be the consumer who will already be paying a premium price for his electric car.

The Mike Bianchi interview of EV Pioneer Howard Wilson quoted in an earlier paragraph of this Newsletter is on the right track. The challenge for commercial acceptance of electric cars is not continued emphasis on single-charge range. It is, instead, a marketing challenge to convince customers they should own an electric car for the back-and-forth driving, including commuting. Most of these uses are within the capability of existing electric vehicles. I referred to a log I keep of trips made in my converted Mazda RX-7. In the last twenty four days I drove the car thirty three times, a total of 217 miles. The average trip length was 6.38 miles. The longest round trip was 12.7 miles and the shortest was 2.1 miles. I am retired and don't commute. I live in a suburban area where everything I need can usually be found within 10 miles of home.

Do other EV owners have a similar record of their vehicle use? If you will send your list to me, I will prepare a summary report for a future FVEAA Newsletter. Send them to the PO or E-mail address on the Newsletter: (electric_bill@compuserve.com)

Bill Shafer

FVEAA OFFICERS FOR 1998

With one exception, all current officers of the FVEAA are willing to serve another term. The present officers are:

President	- Ken Woods
Vice-President and Newsletter Editor	- Bill Shafer
Secretary	- Dave Aarvold
Treasurer	- Dale Corel
Director and Property Manager	- Dana Mock
Director and Librarian	- Ed Meyer

Bob Munroe, who served as the Project Manager for the Nissan conversion is willing to serve as a Director. He will replace Steve Clark, who has been inactive for the past year.

The Illinois Not-For-Profit Act requires that there be at least three directors. Our Articles of Incorporation and Bylaws should be updated to allow additional Directors.