

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

Address Correction Requested

NEXT MEETING: Friday, February 20 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. Report by Ken Meyer on his project to convert a Ford Festiva. 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 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 Casa Zeus2@aol.com

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

FEBRUARY, 1998 PRESSEZ

1. **Ken Meyers** will be our featured speaker. Ken co-founded our club with John Stockberger. In 1975 he drove his converted NSU to work and was the envy of his coworkers. Over the years he helped many club members with their conversions as well as teaching us how to solder circuit boards. Ken will talk about his new conversion project using a Ford Festiva.

2. **The 1998 Chicago Auto Show:** The Toyota solution- A "kick the tires" Prius hybrid electric with a sophisticated gasoline engine with an 8:1 compression ration and 10:1 expansion ratio. The Big Three solution: The courtroom - Let the attorneys solve air quality problem and "Lets wait and see" . The Big Three's actions speak so loudly that you can't hear their words.

KEN

MINUTES OF JAN 98 MEETING

The meeting on January 16 at the College of DuPage was called to order by President Woods at 7:45PM. Twelve members and two guests attended.

President Woods noted the meeting date of January 23 that appeared in the Newsletter was wrong. The Editor apologized.

The minutes of the previous meeting were approved as published.

Treasurer Corel reported \$ 2322.42 in the savings account and \$ 2442.56 in the checking account. Thirty three participation certificates are still outstanding. His report was approved.

Member Fred Kitch gave presentation on the design and manufacturing of machine tool control transformers. These are made in ratios up to 10:1. Rather than interleaved stacking of individual magnetic iron laminations, the edges are end-welded to provide a stable structure. These small transformers generally have efficiencies of about 98%.

There followed a discussion of magnetic coupling for automatic recharging of an electric car in the garage. The conclusion was this is probably impractical because of the air gap between the iron core section on the vehicle and the E-core section imbedded in the garage floor.

Member Polester reported on a 3-cylinder Geo Metro engine for possible hybrid use. It is 23 long, 21" wide, and 24" high, weighing an estimated 115 pounds. This engine that produces 60 HO@4500 rpm (30 @ 2000) is probably more powerful than required for the typical 3000 pound converted EV hybrid.

Member Ed Meyer reported on his steady-state tests with the Nissan:

1) In 3d gear @ 26 mph. I = 20 Amps, 3.2Kw (4.28 HP). Energy = 92wh/m

2) In 3d gear @ 35 mph I = 40 amps, 6.4 Kw (8.58HP) Energy = 157 wh/m

3. In 4th gear @ 45 mph I = 70 amps, 8.4 Kw (11.2HP) Energy= 187 wh/m

4. In 4th gear @ 55 mph I = 100 amps, 12 Kw (16.1 HP) Energy = 219 wh/mile

System voltage remained at 120 volts during each of these runs.

From this data, it appears one approach to a 3000-pound hybrid vehicle would be a 20 horsepower engine run at a constant speed and belted to a truck alternator that could deliver about 100 amps.

A general discussion of this data followed.

Member Ken Meyers is planning to convert a Ford Festiva this summer. This will be discussed at the next meeting.

The meeting was adjourned at 10:35 PM

Submitted by

Bill Shafer
Secretary by default.

RECENT ARTICLES ABOUT ELECTRIC VEHICLES

Member Jerry Mitchell has been experimenting with battery charging using a charger from PulseTech. He provided an account of a test of the technique performed by Clair Bell of Green Motorwerks in California. She is also the editor of the EAA Newsletter, Current Events. The car was a Kewet E1-Jet 3 Neighborhood EV, powered by eight Trojan 30 XHS modules that make up the 48-volt system. The batteries would start to gas at 55.6 volts with a conventional charger. With a PulseTech charger the 25-amp charging current stayed stable until the voltage reached 58 volts and then started to taper off. The car's usual range with conventional charging was 14.7 miles to the 80% discharge level. With pulse charging, the range increased to 25 miles. The phone number of PulseTech is 1-800-580-7554. Green Motorwerks is (510) 521-4300.

The 1/4/98 issue of **Chicago Tribune's Transportation Notes** reports that Toyota has 2000 orders for the PRIUS hybrid. We were also furnished with a copy of technical details for the Toyota PRIUS Hybrid. Unfortunately, they were in Japanese and undecipherable to your editor. Maybe it will be translated when Toyota is ready to market the vehicle in the US.

Electric Vehicles Gear Up, a reprint from the **October 13, 1997 issue of Chemical & engineer News** provided an overview of EV developments. The toughest challenge for automakers is to offer an electric vehicle that isn't going to cost the customer "more for less". Opportunity charging points are springing up in many places but EV owners have to adapt their car use to plug them in at these locations. The effects of quick charging on the life of various kinds of batteries are yet to be decided. A NiMH battery can regain 85% of its charge in just a half-hour, but this requires a significant investment in electrical facilities for the power level required.

A nickel investment boosts outlook for Chrysler's electric vehicle sales. Chicago Sun-Times 12/28/98. Chrysler has been using lead-acid batteries made by Electrosorce in electric adaptations of their minivans. They have decided to shift to a NiMH battery made by the French firm, SAFT. The NiMH will extend range. Chrysler minivans, with lead-acid batteries, lease for \$ 450/month over a 3-year lease period or a one-time lease charge of \$ 15,000.

Sport utility vehicles targeted by California air quality officials. Chicago Sun-Times 12/28/98. These vehicles, classed as trucks, are exempt from most emission and mileage requirements. They may soon have to comply with these regulations. Only vehicles weighing 7000 pounds would be exempt. Others will meet the same emission and mileage requirements as cars. The move is opposed by automakers who have said it will take time to reconfigure engines in these cars to comply.

Two small electric cars, reminiscent of the Citicar, were recently exhibited. They are Canada's Neighborhood Vehicle and the Tulip produced by Peugeot. Electric Motor Cars in Fargo, ND builds the GEM. Consumer acceptance of cars of this size is questionable. The **Chicago Tribune on 12/27/97** had a brief note that small conventional car sales were down 13% at Ford, Saturns down by 10%, Chrysler Neons down 19%, and GM's Geo Metro down 38%.

RECENT ARTICLES ABOUT ELECTRIC VEHICLES -Continued

Electric Cars? Fahgedaboudit! Readers Digest, January, 1998. This article begins by describing the driving experience of a California person who leased a GM EV1 during a 38-mile trip that included climbing a steep grade on Highway 101. The car didn't make it. The article then lists objections to EVs: 1. Sticker shock; 2) The public pays for various incentives and rebates; 3) Consumers want something better; 4) No better battery in sight to provide the range that consumers want. The conclusion - the electric car may be an expensive way for those who can afford it to make a statement about the environment.

Member Ray Oviyach provided the January, 1998 issue of **Service Tech** published by the **Service Technician's Society, an affiliate of the SAE.** The cover article summarized electric drive systems and included a graph of fuel consumption vs average speed for a 20km trip. A second graph plots engine efficiency vs average speed. A third graph plots carbon dioxide emission for the same trip. The article also compares five hybrid drive patterns. The highest rating was given to single-shaft parallel hybrid system with an automatic shifting gearbox.

A second article analyzes flywheel energy storage systems used for power-averaging applications. Three energy storage levels are mentioned: 2 kwh for a small car, 150 kwh for buses and trucks, and 3000 kwh for stationary energy storage applications.

A third article reports a battery life field investigation of battery lives conducted by Arizona Public Service, the sponsor of the annual EV competition. Test results show that charging at a low rate can shorten the battery life. A recommended charging time from 80% discharge is 3 hours. (Editor's note - none of the chargers used the pulsing techniques mentioned earlier in this Newsletter).

The December, 15 issue of Industry Week has an article about the work of Burt Rutan, the aircraft innovator whose products include Voyager, a plane that flew around the world on a single load of gas. The article reports he has built an ultralight street car for GM that uses an all-composite body.

On the electric bicycle front, the **New York Times** had an article titled, **A Bet on Electric Bikes, or at least on Lee Iacocca.** Unique Mobility, an innovative company that has toiled for 14 years on the technological frontier of electric vehicle, snagged Lee Iacocca as an important investor. His company, EV Global, bought a 12% stake in the company. He plans to concentrate on producing an electric scooter that could find acceptance in many Asian countries and South America. It is likely that electric scooter and bikes will be easier to sell than electric cars. Unique has an important partner in Taiwan's Kwang Yang Motor, the largest producer of scooters there. Taiwan requires that electric scooter sales be 2% of the total market, starting in 2000. About 170,000 electric bikes were sold in Asia last year. Unique's stock symbol is UQM.

FROM OTHER EV NEWSLETTERS

The Eastern EV Club (EEVC) in their January selected Dan Carlin as Member of the year in recognition of his work restoring antique electric cars housed in Boyertown and displaying these vehicles at exhibits in which the EEVC participates. They had an article written by student Ben Fratto about the converted Ford Escort at Cinnaminson High School. This car was inoperative because of a faulty GE Evt-15 controller. It was repaired with the help of an EV Partners, a discussion group on AOL.

Electric Grand Prix Corp (Rochester NY) in their quarterly newsletter featured a report on EVS-14. The fourteenth biennial (28 years) meeting was held at Florida's Disney World in December. Outdoor activity was limited because of rain. About 40 manufacturers provided 50 electric vehicles for a ride-and-drive demonstration.

The issue has test drive reports on the Solectia Sunrise and the ETHOS -3. The regenerative braking system on the ETHOS is different. Regeneration increases as pressure on the brake pedal increases. It notes that Unique Mobility's PowerPhase traction drive is a drop-in unit. The motor-inverter efficiency is listed as 90%. The estimated cost for the unit with an annual production level of 20,000 units is \$ 2000.

There were also articles about batteries. Included were improved versions of lead-acid by Exide and Hawker; NiMH by Ovonic, Panasonic, BP, and Saft; Lithium by Sony, 3-M, and SAFT; and Nickel-chloride by AEG and Zebra.

Miscellaneous items included information that the 50 Kw inductive charger used for the EV1 requires a three-phase service. The inductive port is 92% efficient. Electric Fuel's zinc-air battery costs \$ 80/kwh. Unique Mobility's EV-100 brushless motor has 24 pole pairs and is more efficient than ac induction motors. NiMH batteries being used by Toyota and Honda have a target price of \$ 300/kwh.

EV Circuit, published by the Ottawa group in their Nov.-Dec. newsletter had an informative article about battery chargers written by Earl Wallingford. He observed that the battery itself acts as a huge capacitor on the dc side of the charger. Additional capacitance should be provided on the ac side. Rick Lane wants to sell his converted VW 1987 Jetta that has a winterized battery and used for 18,000 km of commuting. He intends to build an improved EV for his daily drive.

VEVA, the other Canadian group in Vancouver in the January issue of their newsletter contained comments about EVS-14. Bruce Parameter has his coverage of EVS-14 on the Internet at: <http://www.electric-vehicles.com>. There were also comments about the Japanese Luciole, a small bubble-top 2-passenger car with tandem seating, dubbed the "pocket rocket".

FROM OTHER EV NEWSLETTERS - Continued

Future Drive, the Argonne Lab publication that provides news about DOE-sponsored competitions. The lead article provided information about the Sunrayce 97 event. The solar-powered vehicle from Cal State (LA) came in first out of 36 entries with a pace that averaged 43.29 mph over the 1200-mile distance. MIT was second and Stanford third. Only 28 minutes elapsed time separated first and third place. The next race will be in 1999.

There was an article on the Future Car competition, an event covered in a previous FVEAA newsletter. Also included was a summary of the 1997 Tour de Sol sponsored by the Northeast Sustainable Energy Association. This year the course ran 350 miles from Waterbury Conn. to Portland Maine.

The issue devoted two pages reporting results of ten competitions held in 1997. The publication is available by requesting a free subscription from Catherine Kaicher, Future Drive, Argonne National Laboratory, 9700 South Cass Avenue, Argonne IL 60439.

Global EV News, Larry Dussalt's group, January magazine devoted most of its 32 pages to accounts of what occurred at EVS-13. Almost every session was covered. A CD-ROM of EVS-14 Proceedings are available at (415) 249-2690, or e-mail ev@evaa.org.

Besides EVS-14 coverage, the issue has an article relating to the current negotiations between the EPA and automakers. The present emission standards are fixed until 2004, but California and other states (New York, Massachusetts, and Vermont) have adopted the California requirements that include mandates for ZEV's (Electrics). Automakers want to avoid a patchwork of state regulations and build cars that can be sold in all the states. They offered to build cars to a National Low Emission Vehicle (NLEV) standard if states adopting the original California standard would drop the ZEV requirement. NLEV emission reductions of 70% would be achieved by improved catalytic systems and electronic engine control measures. **They would not include EVs.** Thus far, California has modified its requirements under heavy lobbying. The other states are holding firm to the original requirement. The issue is expected to be resolved soon.

FVEAA PAID-UP MEMBERSHIP ROSTER

The last two pages of this newsletter contain the listing of persons who are paid members for 1998, according to the Treasurer's record. The roster is included only in the newsletters sent to paid members. The roster is excluded in other copies, including exchange and others who receive complimentary copies. This policy was adopted last year by the FVEAA to avoid members' mailboxes becoming further cluttered with unwanted solicitations or phone calls at dinnertime based on their interest in electric cars.

FOX VALLEY ELECTRIC AUTO ASSOCIATION PAID MEMBERS JAN 98

NAME STREET	AREA	PHONE TOWN	FAX	ST	E-MAIL ZIP	SUBZP
David B Aarvold 915 Oak Street	815	758-3412 DeKalb		IL	60115	-3470
Mark Ailes 223 West Crystal	630	268-8082 Lombard		IL	60148	
Dr Rodney Bohlmann 630 Wesley Ave. 1st Fl.	609	383-1305 Ocean City		NJ	08226	
Rob Bohnivert 811 N. Rinear	847	838-2126 Antioch		IL	60002	
Alfred Brinkmeyer 4323 Devon Ave.	630	968-7052 Lisle		IL	60532	-1137
Jack Cahill 1 S 736 Vista Avenue	630	629-3989 Lombard		IL	60148	
Tom Cartwright 1104 Douglas Terrace	815	288-1300 Dixon		IL	61021	-1724
Larry Claypool 21403 8th Avenue	815	469-2936 Frankfort	469-1354	IL	60423	
Dale Corel 595 Gateshead North	847	228-5952 Elk Grove Vill.		IL	60007	-3433
John Emde 6542 Fairmount Avenue	630	968-2962 Downers Grove	447-4673	IL	60516	-2919
John J Enhorning PO Box 29 (3956 Stiles Rd	616	843-3093 Ludington		MI	49431	-0029
David Filichicchia 532 Stone Gate Court	847	534-7439 Schaumburg		IL	60193	
Len Fisher 6351 Amiston Drive	614	764-9733 Dublin	764-5875	OH	43017	-1917
William T Forde 12231 44th Drive SE	206	337-4179 Everett		WA	98208	9101
Alexander Glowiak 101 Rumsey Road	630	968-2486 Westmont		IL	60559	-2650
Hendley Hall 530 Lawn Drive	815	877-7290 Loves Park		IL	61111	-5129
Everett Harris 214 Nebraska Street	630	232-0344 Geneva		IL	60134	-2824
Paul P Harris 546 Rivershire Place	847	793-0546 Lincolnshire		IL	60069	-3813
Thomas Kaminski 4828 West Warwick	773	282-4828 Chicago		IL	60641	-3509
James E Ketelle 1670 4th Street	715	887-3912 Port Edwards		WI	54469	-1021
Fred Kitch 171 East Burlington	708	447-6125 Riverside		IL	60546	-2147
George Krajnovich 17 W 381 Eisenhower Road	630	834-0370 Oakbrook Terrace		IL	60181	
Lad Kucera 8 Arthur Avenue	630	850-7246 Clarendon Hills		IL	60514	
Steve Leisner 1617 Quincy Avenue	414	634-4470 Racine		WI	53405	
Robert Loescher N26W27192, Hwy SS	414	691-3841 Pewaukee		WI	53072	
Dr Henry Shaw, MD 3317 Dan's Drive	715	341-6004 Stevens Point		WI	54481	
Michael Magiera PO Box 198	317	963-5227 Sharpsville		IN	46068	-0198

FOX VALLEY ELECTRIC AUTO ASSOCIATION PAID MEMBERS JAN 98

NAME STREET	AREA	PHONE TOWN	FAX	ST	E-MAIL ZIP	SUBZP
Edward E Meyer 216 Sunshine Drive	630	759-0326 Bolingbrook		IL	60440	-1545
Jerry Mitchell 4517 Lilac	847	299-3497 Glenview		IL	60025	
Dana Mock 154 Denver	708	759-8033 Bolingbrook		DMock IL	60440	
Bob Munroe 22 W 388 Glen Valley Dr.	708	858-7066 Glen Ellen		ROBMUNSC@aol.com IL	60137	
Kenneth Myers 1303 Indiana Street	708	584-6057 St Charles		IL	60174	-2543
Richard Ness 2129 North Naragansett	773	889-7757 Chicago		IL	60639	
L J Obiala PO Box 369	920	867-3445 258-4125 Weyauwega		WI	54983	-0369
Scott Ortiz 332 North Martha Street	630	495-8327 Lombard		IL	60148	
Raymond Oviyach 6800 Laramie Avenue	708	560-0715 Oak Forest		roviyach@aol.com IL	60452	-4528
Jim Paulsen 848 62nd Street	708	482-3821 La Grange		IL	60525	
Paul A Polster 344 Lawn Terrace	847	740-1048 Round Lake		IL	60073	
Bob Randerson 25 South Spring	708	352-3887 LaGrange		IL	60525	-2236
Ben Schmid 1315 Fitzgerald Drive	219	924-7951 Munster		IN	46321	-4203
William H Shafer 1522 Clinton Place	708	771-5202 River Forest		WShafer@aol.com IL	60305	-1208
Mark Tilton 905 Hilltop Blvd.	815	344-3066 McHenry		IL	60050	-8202
Carl Tipton 415 Briarwood Place	515	292-8493 Ames		C_Tipton@molebio.iastate.ed IA	50010	-3506
Vladimir Vana 5558 Franklin	708	246-3046 LaGrange		IL	60525	-3347
Alan V Wilson 917 White Avenue	608	362-2956 Beloit		WI	53511	-4549
Kenneth Woods 1264 Harvest Court	630	420-1118 420-1517 Naperville		CasaZeus2@aol.com IL	60564	-8956