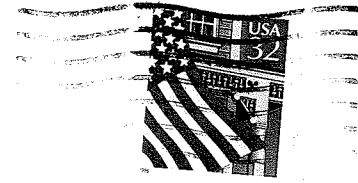


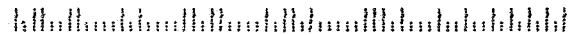
Fox Valley Electric Auto Association
1522 Clinton Place
River Forest, IL 60305-1208



John Emde
6542 Fairmount Avenue
Downers Grove IL 60516 -2919

Address Correction Requested

6051672919 42



NEXT MEETING: Friday, January 17 at 7:30PM in Room K-161 at the College of DuPage, SW corner of 22nd Street & Lambert Road in Glen Ellen

DISCUSSION TOPICS - 1. Auto Show final details. 3. Tutorial on Decision Tree Preparation by Ed Meyer. 3. Nominations for Directors. 4. 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. Dues for new members joining in January will be \$ 18.

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
(708) 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 WShofer@aol.com

JANUARY, 1997 PRESSEZ

The next meeting will be one week before the opening of the McCormick Place Auto Show where the FVEAA will exhibit five cars and one electric bike. We could use a few more persons to help Friday, Jan 24-Sunday Jan 26. Please call me if you can participate. There are a few details to work out such as work passes to distribute to volunteers who will help man the show. The Show will be the first discussion item. Ed Meyer's tutorial on decision trees, postponed from the December meeting will be given in January. Now that Founder John Stockberger will no longer be a director, we need to nominate a slate of three Directors, a Librarian, and a Property Manager to be elected in February. Open topics will occupy the remainder of the time.

KEN

DECEMBER, 1996 Meeting Minutes

The meeting at the College of DuPage was called to order by Vice President Shafer at 7:42. Seventeen members and four guests attended, three for the first time.

The November meeting minutes were approved. The Treasurer reported \$ 2322.42 in the Savings account and \$ 1532.62 in the checking account. Member Rodney Bohlmann's check to the FVEAA for \$250 as payment for Bill Shafer's DAF parts used in his Escort conversion was accepted.

Gary Krol (Head of Safety) with the **World Of Wheels**, the sponsor of the Custom Auto Show Jan. 24-26, presented a description of the event and the FVEAA responsibilities for our exhibit. This is the 35th anniversary of the exhibit in Chicago that is now rated as a Class 5A, the largest category with about 350 cars expected appear. Harry Willett, 14200 South LaGrange, Orland Park 60462 (708) 349-1219 is the show chairman.

Six vehicles have been selected:

The Club's Nissan Converted Sentra
Ed Meyer's customized Citicar
George Krajanovich's MI Towncar
Bill Shafer's Mazda Conversion
Steve Clark's Unique Mobility Electrek
Rich Ness' electric bike.

ComEd has agreed to provide a driver, truck, and covered trailer used for the Ecostar Program to haul these vehicles from each owner's home to the show on January 23, and to return them on January 27. The owner of each vehicle or FVEAA member authorized to substitute for him must accompany the car each way.

The cars will be delivered to King Drive and 21st Street, or other designated unloading area. The owner (FVEAA Representative) will drive the car into the exhibit space.

FVEAA members are responsible for setting up the exhibit, observing all McCormick Place and Show regulations. Gary will ask to have the back of the FVEAA space hung with draperies so our signs can be attached, and where a poster and desk can be placed. He offered to also provide stanchions where each car can be roped off to prevent inquisitive visitors from tampering with the cars. Ropes are not included.

ComEd has also agreed to provide an information poster for the display. Bill Shafer will work out details for both car transfer and posters. He will also prepare an updated FVEAA information sheet to distribute to visitors at our exhibit.

After the show closing on Sunday at 7PM, the cars must be moved by owners (FVEAA Reps) to a suitable parking space near McCormick Place (South) for overnight storage. Gary will get more details on this. ComEd will begin to move the vehicles at 8AM on Monday, January 27th and return them to the original pickup sites.

Final exhibit details will be worked out with Gary at the FVEAA January 17th meeting, one week before the show.

Member Mock has been surfing the Internet for electric car items. He will pursue the Website (evchdlr@primenet.com (Phoenix Electric Auto Association) - the Phoenix group to submit photos of FVEAA vehicles for additions to their Web Page.

John Stockberger whose new address is 421 Gardens Drive, Crossville, TN 39555. He can no longer serve as an FVEAA director because of his out-of-state move.

For additional meeting information see accompanying article on mpg equivalency.

Submitted by Secretary
Dave Aarvold.

ARTICLES ABOUT ELECTRIC VEHICLES

Combining The Best Of Gas and Electric. **Chicago Tribune, July 14, Transportation Section Page 3.** This article from the Boston Globe describes the advantages of hybrid-electric cars. It reports that Chrysler, VW, Hundai, Toyota, Renault, and other carmakers are testing development models. The article describes the re-engineered version of a Ford Taurus by Andrew Frank, a professor at the University of California - Davis.

The hybrid Taurus achieves 60 mpg. An engine, motor, and two transmissions weigh about 150 pounds less than the standard drivetrain. The electric drive is used below 25 mph. Above 25 the output of a 600 cc Honda engine used in a Geo Metro is activated and the combination substitutes for the original Taurus 6-liter (6000 cc) engine. Fuel for the Honda engine is CNG.

Victor Wouk, a pioneer proponent of the hybrid concept, last year stated that hybrids are the only technology capable of reducing emissions and lowering fuel use.

Auto Q & A. Chicago Sun-Times April 22, 1996. Q: My 1994 Saturn has only 10,000 miles on it. I drive just three miles to work daily. Should I take it for a high-speed drive on a regular basis? A: Short drives are murder on the car. Take the Saturn once every two weeks for a highway drive, but there is no need to speed. Just drive at 55-65 for half an hour. (Editor's note A better reply would have put him in touch with the FVEAA where he could have bought a used electric conversion for his work trip for about \$ 2000 and saved both his Saturn and money).

Toyota's Dual-Powered Car ready for mass production. Daily Herald, November 23, 1996. The article states that Toyota plans to manufacture tens of thousands of their new hybrids by the end of 1997. The steep price tag of \$ 22,500 may produce meet resistance. Toyota will keep the price down to establish a new market for these cars.

GM has a toll-free number for their converted S-10 pickup truck. Chicago Tribune, November 24, 1996. The pickup trucks which cost about \$ 30,000 will be sold in the Northeast where customers' can test drive and buy them. Single-charge range is about 60 miles. Ford and Toyota also have plans for similar vehicle sales in Massachusetts.

No Respect - EV-1's aluminum body shouldn't stand in Prowler's shadow. Ward's Auto World, August 1996, Page 47. The Prowler has an aluminum body and a \$ 35,000 price tag. So does GM's EV-1. Chrysler and Alcoa collaborated on the Prowler. GM and Alcan worked together on the EV-1. Over 30% of the Prowler exterior is plastic panels. The underlying body uses aluminum extrusions. The GM-EV-1 employs the Aluminum Vehicle Technology (AVT) system with more than 15 years of development that has been engineered for high-volume use. The EV-1 body is a more conventional design with aluminum sheets that use spot welds, special adhesives, and mechanical fasteners. Alcan says their race-car-based space frame design allows use of all forms of aluminum. (Editor's Note - Isn't competition exciting?)

ARTICLES ABOUT ELECTRIC VEHICLES - Concluded

GM begins "electrifying" blitz. Daily Herald November 30, 1996. The target buyer for GM's EV-1 is 35-54 years old, a college graduate with a family income of more than \$ 125,000, and a strong interest in the environment and new technology. The campaign features TV ads, 27 billboards in Southern California, and a kickoff featuring a commercial made by the "Star War's" production company. (Editor's note - wonder if R2D2 could drive one?)

World's smallest Solar Car (That can be driven by an adult driver) is 7.5 feet long and only 20 inches high. It was entered in a solar car rally near Tokyo by builder Masayoshi Ogawa.

Lithium Batteries Take to the Road. Tech Transfer Highlights (ANL) 1996, Page 3.

Lithium batteries have been used for camcorders, laptop computers, cell phones, and other consumer items. They are now being considered for high power applications. Cell developments by Argonne, as a part of the U. S. Advanced Battery Consortium Program, include lithium-polymer cells. These cells have a metallic lithium negative electrode, a polyethylene-oxide based solid electrolyte, and a vanadium oxide positive electrode. Cells operate at 60 degrees C. Processing technology developed by ANL has been transferred to 3M Company for the scale-up required for high-capacity cells and batteries.

In a related work at ANL, they have developed a stabilized Manganese Dioxide Electrode for rechargeable 3-volt lithium batteries. Use of this material improves the recharging capability. Material characteristics are tailored to enhance performance.

FROM OTHER EV NEWSLETTERS

EEVC, The Eastern Group in their December Newsletter featured a reprise of GM's EV-1 Specifications. There was a philosophical essay by Oliver Perry on the course of electric vehicle development that is worth reading. Guy Davis has an article on the early history of the electric vehicle. They report that Edison EV, part of the Southern California electric utility, is cooperating to provide the GM-Hughes-Delco Mangecharge equipment needed for the EV-1. It expects to sell 150 units in 1997. (Editor's note - this seems irrational because the charging system is a high-demand, low energy use device that is usually hated by utility companies. The investment is high to meet the peak demand while the charging revenue is small because only a few kilowathours are required.)

The issue also reports that Unique Mobility has a contract for Hybrids from Taiwan. They will develop a propulsion system consisting of batteries, traction motor, an engine-generator unit that has less than 1-liter displacement, and control unit to manage the power transmission.

FROM OTHER EV NEWSLETTERS - Continued

AVEA, The Aussies, in their Nov/Dec Newsletter featured a report of the fourth World Solar Challenge. The Honda entry averaged 89.76 km/hr that bested the 1993 Swiss Team record of 84.96 km/hr. GM's Sunraycer won the first race averaging 66.92 km/hr. The participants conducted a highly organized procedure. Honda alternated two sets of drivers. Vehicles were accompanied by a support team, ready to deal with any emergency. Finishing in second place by 1 hour and 28 minutes was the Swiss Team sChooler that averaged 86 km/hr. Third place went to the Japanese Aisin Seiki entry that averaged 80.70 km/hr. Australian cars had a respectable showing. Their Desert Rose featured a carbon fibre composite structure.

They also had an article about the AVEA National Field Day (For EV's) in September. There were three competitions: an Electromite that allows two motorcycle batteries rated 9 amp-hr and weighing 7 kg, an Electrathon where vehicles carry 30 kg of batteries, and an Electrocycle in which 15kg of batteries are allowed. The event also had commercial exhibits and displays of AVEA members' electric cars.

The issue also had an article by Bill Walters on use of his VW Rabbit conversion in Wyoming. His batteries are Trojan T-105's that have a peak capacity of 150 amps for 41 minutes. The car can maintain 50-55 mph while drawing 80-100 amps. With a tailwind the current drops to about 50 amps.

EV Circuit, the Ottawa Group in their Nov/Dec issue reported on the Concordia University in Montreal participation in the Future Car Challenge. The base car was a 1995 Chrysler Intrepid converted to a parallel hybrid. A 1.9-liter VW direct injection diesel developing 65kw peak and Solelectria permanent magnet motor rated at 22 kw peak were combined. There were only 90kg of batteries that fit into the spare tire well. Part II of the competition will begin in June, 1997. Before then, the students will modify the drivetrain and car to reduce weight, increase efficiency, and use an automatic clutch to separate the engine from the drivetrain.

They also report that Solelectria has an arrangement with Mirak Chevrolet in Arlington, MA to sell Solelectria vehicles directly to private individuals. Included is the well-tested FORCE, a converted GEO Metro, ideal for commuting use.

VEVA, the Vancouver Association, in their December issue reported that CARB may be backtracking on their 10% EV quota for 2003. They also note that a DELCO-AeroVironment team converted a Saturn Coupe that was driven for 1020.5 miles in a 24 hours period on Los Angeles streets. Batteries were valve-regulated, lead-acid type and a new ProCharge fast charger. In addition, there is a photo of the Sparrow EV, a new 1-passenger vehicle suitable for commuters and selling for an estimated \$ 12,000. The car weighs 900 pounds. It has starved-electrolyte, sealed lead-acid batteries, a 20-HP Advanced DC motor, and a Curtis Controller. There is an article about a catalytic heater for EV's that will keep batteries warm developed by Matsushita in Japan. It is eight inches long, 5.4 inches in diameter and uses gasoline fuel. The process is flameless.

FROM OTHER EV NEWSLETTERS - Concluded

John Wayland provided specifications for Optima D750S batteries that have standard SLI terminals. Each 12 volt unit is BCI Group 34 (9.9375 inches long, 6.875 inches wide, and 7.8125 inches high), and weighs 44.9 pounds. Performance specifications are 750 cold cranking amps, Reserve for 124 minutes, 52 Ampere-hours @ 2hour discharge rate, power rating 9.0 kW, internal resistance 0.0028 ohms. Constant-voltage charging 14.7-15 volts with temperature less than 50 degrees C until current falls below 1 amp - then finish with a 2-amp constant current for 2 hours.

ENERGY USE AND RANGE CALCULATIONS FOR THE NISSAN

A GC-2 lead-acid, deep discharge, 6-volt battery intended for golf cart application will sustain an acceptable terminal voltage while delivering 75 amps for the number of minutes shown. A Trojan 105, for example, will deliver this current for 105 minutes. The energy stored in each battery is:

(6 volts)(75 amps)(105 minutes) /60 minutes per hour = 0.787 kWh stored energy
 With 16 batteries in a 96-volt system, the total energy = (16)(0.787) = 12.6 kWh.
 The AC input energy has been metered and found to average 0.339 kWh per mile.
 Expected range is therefore 12.6/0.339 = 37 miles. See Ed Meyer's use log below:

Date:	Mileage Return	Trip Miles	Kiliwatt Return	Trip KW	Trip WattHr/Mile	Trip Miles/Gal.
11-26-96	195.8		110.0			
11-26-96	219.2	23.4	118.0	8.0	0.342	44.4
11-28-96	247.0	27.8	128.0	10.0	0.360	42.2
11-28-96	274.0	27.0	138.0	10.0	0.370	41.0
11-29-96	289.0	15.0	143.0	5.0	0.333	45.6
11-29-96	291.0	2.0	144.0	1.0	0.500	30.4
11-30-96	320.0	29.0	153.0	9.0	0.310	48.9
11-30-96	339.0	19.0	160.0	7.0	0.368	41.2
12-01-96	352.0	13.0	164.0	4.0	0.308	49.4
12-02-96	382.0	30.0	174.0	10.0	0.333	45.6
12-03-96	406.0	24.0	183.0	9.0	0.375	40.5
12-06-96	444.0	38.0	195.0	12.0	0.316	48.1
12-07-96	477.0	33.0	205.0	10.0	0.303	50.1
12-08-96	484.0	7.0	208.0	3.0	0.429	35.4
12-09-96	504.0	20.0	215.0	7.0	0.350	43.4
12-10-96	533.0	29.0	224.0	9.0	0.310	48.9
12-11-96	551.0	18.0	230.0	6.0	0.333	45.6
12-12-96	569.0	18.0	237.0	7.0	0.389	39.1
12-13-96	603.0	34.0	248.0	11.0	0.324	47.0
	Accumulative Miles	Average Miles/Trip		Accumulative KW	Accumulative WattHr/Mile	Accumulative Miles/Gal.
	407.2	22.6		138.00	0.339	44.8