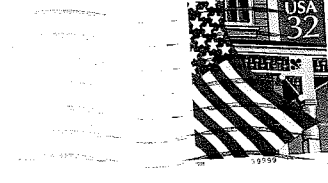


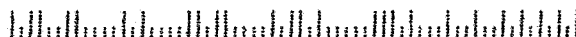
Fox Valley Electric Auto Association
1522 Clinton Place
River Forest, IL 60305-1208



John Emde
6542 Fairmount Avenue
Downers Grove IL 60516-2919

Address Correction Requested

60516+2919



NEXT MEETING: Friday, December 20 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. World of Wheels Presentation by Ken Krol. 2. Project Status by Bob Munroe. 3. Tutorial on Decision Tree Preparation by Ed Meyer.

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 December will be \$ 19.

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

President - Ken Woods
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DECEMBER 1996 VEEPSEZ

President Ken Woods will be out of town on December 20 so the meeting becomes my responsibility. The Club has decided to participate in the **World of Wheels** auto show in January. We will be sponsored by the Chicago Tribune. Exhibit space is available for six cars from FVEAA members. This will be the first discussion item at our December meeting.

Ed Meyer will give a tutorial on construction of a Decision Tree for conversion of a car to electric drive if there is time. This was the #1 future project choice of members.

This will be the last newsletter sent to members who have not renewed their membership for 1997. Send your \$ 20 check to Treasurer Corel if this applies to you.

Bill

NOVEMBER, 1996 Meeting Minutes

The meeting at the College of DuPage was called to order by President Woods at 7:41. Twenty members and seven guests attended.

The November meeting minutes were approved.

The four principal officers were reelected. Vote on Directors was postponed, pending determination of John Stockberger's status.

Bob Larsen from Argonne Lab Center for Transportation Research and the Applied Science Section delivered an overview of work on electric vehicles by that group. Two hundred twenty-five electric cars and seventy-five hybrid cars have been tested. Extensive data is available, including dynamometer performance.

Argonne test procedures contain three major parts: NYC stop-and-go (Average 7mph), Los Angeles-4 (Urban - Avg. 20 mph), and the Federal Highway cycle used to determine CAFE fuel economy (Avg. - 48 mph with a top of 60 mph).

Argonne supported the 1996 Tour de Sol from NYC to Washington, D.C.. The Solectria Force, Escort hybrid from the University of Wisconsin, a Lamina hybrid built by Virginia Tech students, and several other vehicles were dynamometer pre-tested. A standard Neon gasoline car made the run with the competition vehicles for comparison purposes. Bob said that most of the driving was done very carefully to maximize range, with coasting and discharges up to 95%.

He observed that the energy economy of dc systems are still ahead of ac, and hybrids are slightly ahead of gasoline cars in midrange highway tests. He also noted that an Argonne study shows that replacing Chicago taxicabs with electrics would improve the air

quality as much as eliminating all industrial plant emissions in the city.

When a car's energy consumption is calculated using CAFE standard, the mileage is adjusted to add energy for the refining and distribution of gasoline fuel. Power plant conversion efficiency, electrical transmission losses, and charger efficiency is added for electrics.

Argonne's vehicle use data shows that 85% of auto drivers go less than 75 miles per day but over half want an electric that has a 100-120 mile range. Things that can improve the electric's range are thermal management of battery and controller temperatures. Some chargers tested had 40-90% harmonics. Chargers without isolating transformers are particularly bad in this respect. They are also hazardous, even with ground fault interrupters.

Manager Munroe updated the Nissan status. The FVEAA has been invited to exhibit the Nissan and up to five additional cars at the January 24-26 "World of Wheels" car show at McCormick Place. We will be sponsored by the Chicago Tribune. This will be an excellent opportunity for the FVEAA to make itself more widely known. Only minor work is required on the car to make it show-ready. The consensus was to proceed with the rear spring replacement as soon as possible as an essential item. Ken Krol will make a presentation on the show at the next meeting and advise us of our responsibilities.

Member Helenowska donated her Fiat X-19 Bertone to the club for conversion by an FVEAA member. Her offer was accepted.

The meeting was adjourned at 10:38 p.m.

Submitted by Secretary Dave Aarvold

RECENT ARTICLES ABOUT ELECTRIC VEHICLES

The EV-1 initial marketing this month inspired a number of articles on the subject. The most informative was published in December IEEE Spectrum on Page 20 entitled **EV-1 hits the streets** by EV pioneer Victor Wouk. He reports the car will be leased through 26 retailers in California and Arizona. The "sticker" price is \$ 33,995, just below the threshold point for a luxury tax addition. Lease term is 36 months, 48,000 km. Lease price is reduced by Federal, state, and local tax credits. The Federal credit is 10%, California leases in the Los Angeles area receive another \$ 5000 "buy-down credit, three counties in the area also offer additional allowances that can further reduce the capitalized cost of leases by \$ 2100. These reductions result in a monthly lease cost of \$ 480-640. Lease costs do not include the Delco inductive charger. The largest size that is wall-mounted lists for \$ 1995 and leases for \$ 50-55 a month.

The Federal Energy Department and EPA rate The EV-1 energy consumption at 300 wathours/mile for city driving and 250 wathours/mile on the highway. Estimated annual energy cost @ 10 cents/kWh are \$ 420 for 24,000 km of driving. For comparison, a gasoline car averaging 28 miles per gallon and a fuel cost of \$ 1.20 per gallon would have an annual fuel cost of \$ 696.

The December 9 issue of **Business Week** on Page 40 has an article about the EV-1 entitled **An electric car propelled by star power**. They report that GM is going Hollywood in its EV-1 promotion. Jay Leno has been lined up to drive the first EV-1 off the lot in California. A number of celebrities will be using an EV-1 to arrive at Sylvester Stallone's new movie on December 5, the official launch date for both the movie and the EV-1. Vehicle marketing for GM is being handled by Saturn who plans to emphasize "panache over practicality". Film notables are being lined up as EV-1 leasers. For others, Saturn will have EV-1 specialists who will drive the car to a prospect's home and explain its benefits and drawbacks. The real test will be if the EV-1 can create a niche market for the car.

Their day in the sun. Chicago Tribune 11/3/96. The Japanese Honda entry in this year's World Solar Challenge race in Australia was the winner. The race covers 1900 miles from Darwin to Adelaide. The Honda team made the trip in four days. GM's Sunracer was the winner of the initial event six years ago. Also see the SEVA article on the race in "Other Newsletters".

Ohio State University's September issue of News in Engineering contained an account of the challenge to participate in the Cleveland Formula Electric Race this year. After winning the APS race in Phoenix in March, the car was being prepared for the Cleveland event. During a practice session the race team experienced trouble with motor heating. The student team diagnosed the source as a short circuit between the rotor and stator housing. With only one day before the event, students removed the motor and drove it to the electric shop of a sponsor in Columbus. Working through the night, the sponsor rewound the motor by 3:30 AM, the day of the race. A chartered helicopter flew the motor to Cleveland which was reinstalled just before the event beginning. The race only lasted 1400 feet when the Ohio State and Notre Dame cars collided.

RECENT ARTICLES ABOUT ELECTRIC VEHICLES - Continued

The Future car Challenge was the subject of an article in the October issue of R&D magazine. Twelve universities competed to produce high-mileage cars based on Escort, Lumina, and Taurus platforms. Most of the cars were hybrids. The competition results are shown in the table.

Rank	School Name	City MPG	Highway MPG	Combined MPG	Notes
1	Virginia Tech	49.20	40.23	44.27	SH - Propane fuel
2	Lawrence Tech	30.21	49.60	40.87	PH - Direct Injection, turbocharged Diesel
3	Wisconsin U.	25.39	40.80	33.87	PH - "
4	Ohio State U.	35.40	47.56	47.56	VW 1.9 liter diesel, manual shift
5	Concordia U.	22.35	39.80	31.95	
6	West Virginia U.	29.80	29.80	29.80	
7	Michigan Tech	21.00	31.00	25.95	
8	U. of California - Davis	31.10	0.00 E	14.00	
9	U. of Maryland	0.00	0.00	0.00	E
10	U of I - Chicago	0.00	24.81	13.65	800cc engine, power boost to 100 hp peak
11	U. of Michigan	0.00	0.00	0.00	E
12	California State	0.00	0.00	0.00	E

SH = Series Hybrid PH = Parallel Hybrid E = Electric

Looking for an unusual Christmas gift? The Sharper Image is advertising a folding bicycle measuring 28" x 22" x 11" when folded, and a 27-pound power pack. With light pedaling, the assembly will sustain a 16 mph speed for about 25 miles. The pack contains NiCad batteries that can be recharged in 4-6 hours from a 120-volt outlet. The bike comes from Taiwan and the power pack from the U.S. The price for a bike and power pack is \$ 595. The power pack by itself is \$ 425. (800) 344-4444 to order.

FROM OTHER EV NEWSLETTERS

AVEA, the Australian Group, in their Sept/Oct Newsletter featured eight electric cars, ten electric buses, two general utility vehicles, three neighborhood vehicles, and two electric bicycles that are commercially available today.

EVCO, the Ottawa Canada Association, in their Sept/Oct issue had a report by Rick Lane on his attendance at the NESEA Conference in September where he was one of four speakers on the topic of battery thermal management for cold weather. They report that the first speeding ticket in the United States was issued May 20, 1899 to Jacob German, the driver of an electric taxicab going 12 mph. The issue also had a useful article on Small Auto Conversion to Electric Power written by Errol Wallingford. The article includes tables on motor rpm vs vehicle speed, rolling force losses, air drag losses, and grade force factors.

SEVA, from Sacramento, provided two issues this month. The October Newsletter contained principally club matters. The December issue featured a report on the Electric Vehicle Symposium 13 held in October in Osaka, Japan. Attendance was 1650 persons from 32 countries, 75% from Japan and 9% from the US. Japanese manufacturers have agreed to a standard battery that is 7" tall with recessed terminals, 15" long, and 5" wide. The battery technical session had six companies reporting on the NIMH, four on Lithium-Ion (LiON) and five on advanced lead-acid. EVS-14 will be held in Orlando, FL December 15-17.

There also was a report on the World Solar Challenge in Australia. Forty six vehicles were entered. The winning Honda entry had monosilicon photovoltaic cells with a 24% conversion efficiency. The car had a curb weight of 374 pounds (726 pounds with driver and passenger). It achieved an average speed of 55.77 mph.

GLEAN (Global Electric Auto News) November issue featured a report on EVS-13 that included photos of 19 cars and equipment on display. They were impressed by Toyota's fuel cell, small enough to fit in the RAV-4 EV, and delivering 10 kW. They report that Eco-Stations for electrical, CNG, LPG, methanol, gasoline, and diesel fuel are being built in Japan.

The issue also had a report on lead-acid battery development. Specific energy in 1992 was 25Kw/kg, 35 in 1995, and by 1998 may achieve 50. The Advanced Lead Acid Battery Consortium reports that charging efficiency is improved with three elements in the charging cycle: 1. High initial charging current. 2. Charging voltage above a threshold characteristic of the battery. 3. Enough overcharge to compensate of system inefficiencies.

There is also a report of a 30,000 mile driving test of a Honda Civic hatchback converted in 1994 by AC Propulsion. There were no drive system failures for the AC-150 system that features a 200 hp ac motor running on 336 volts. The Optima batteries were replaced once. Part of the driving including towing an auxiliary power unit, a 250 cc Kawasaki motorcycle engine driving a 17 kW generator, adequate to run the car at highway speeds. Performance is impressive; 0-60 mph in 6.2 seconds and a top speed of 85 mph.

FROM OTHER EV NEWSLETTERS Continued

The Vancouver (VEVA) folks in their November Newsletter had reports on the World Solar Challenge and EVS-13. These may be found in previous items. Articles unique to the VEVA coverage of the race stated that Honda spent \$ 7.9 million on their winning entry that clipped two hours off the previous record. Three Canadian cars were entered. The EVS-13 report included an observation that advanced battery development seems to be heading toward two concepts. European carmakers will produce smaller cars for cities and use 20 kWh batteries while cars for the Los Angeles market will be bigger and have larger battery packs.

They report that Nissan will furnish 30 Evs for testing by California fleet users and intends to market them in 1998. These vehicles will be equipped with LiON batteries produced by SONY. They will have a permanent magnet motor developing 62 kW and a torque of 17 Kg-meters. The drive system is being tested in Japan in the Prairie Joy vehicle.

World Electric Transportation had two issues this month. The October issue has photos of Unique Mobility's flywheel storage system, and photos of a solar car - plans available for \$ 15. The November issue has photos of a Ballard fuel cell installed in their bus.

THE FVEAA EXHIBIT AT THE WORLD OF WHEELS AUTO SHOW

The 1997 World Of Wheels is an auto show at which persons who have built customized cars will exhibit their vehicles at McCormick Place. The FVEAA is honored to be invited and sponsored by the Chicago Tribune to exhibit our vehicles in a room devoted to the FVEAA. Vehicles tentatively selected are; the Club's Nissan, George Krajanovch's MI Towncar, Bill Shafer's Mazda, Steve Clark's Electrek, Ed Meyer's improved Citicar, and Dick Ness' bicycle.

Setup time is Friday, January 24 before 3PM. The Exhibit hours are Friday, January 24 from 5PM to 11PM; Saturday the 25th from 10AM to 11 PM, and Sunday the 26th from 11AM to 7PM. An awards ceremony is held after the show closes. Teardown is after the ceremony.

The FVEAA is expected to deliver the cars on Friday to McCormick place and work with exhibit personnel to move the vehicles into place and set up the exhibit before the show opens. We are also expected to provide members who will be there to explain the cars and our organization to visitors. **Help required:** Three persons for 6 hours on Friday, six for two 6-hour shifts on Saturday, and another six for two 4-hour shifts on Sunday. A sign-up will developed at the December 19th FVEAA meeting. If you are willing to help, but unable to be at the next meeting, please call me at (708) 771-5202 and we can pick a time.

The show is the best opportunity we have had to make our organization known since our 1990 exhibit in Chicago's Lincoln Park, the 20th anniversary of Earth Day.

Bill