

F.V.E.A.A. NEWSLETTER

August 1993

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Director

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6542 Fairmount Ave.
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(708) 968-2692

NEXT MEETING

August 20th @ 7:30pm
College of Dupage
Student Resource Center
Room 1046

Use Lambert Rd. Entrance, Lot 7 at the Southeast corner of 22nd & Lambert
Nonmembers are always welcome!

Director

John Stockberger
25643 Nelson Lake Rd.
Batavia, IL 60510
(708) 879-0207

MEMBERSHIP INFORMATION

Membership to the Fox Valley Electric Auto Association is open to the public. Anyone interested in electric vehicles or electric transportation are encouraged to join. The cost to join is \$15 per year from November to November. If joining in the middle of the year the cost is \$1.25 for every month remaining til November of that year. The cost for new members joining is \$5.00.

Electric Car & Solar Summer Event

Don't Forget! August 21st at the College of Dupage, Parking Lot M. The collaboration of the FVEAA and the Illinois Solar Energy Association brings you the presentations, slide shows, test drives, exhibitions and demonstrations of electric vehicles, and solar sustainable energy. For more information contact Ken Woods at the address and telephone number listed above.

Fox Valley Electric Auto Association

336 McKee Street
Batavia, IL 60510

First Class

John Emde

6542 Fairmount Avenue
Downers Grove, IL 60516
USA

**ADDRESS
CORRECTION
REQUESTED**

PRESEZ

The 1993 Solar and Electric Car Summer Event should be the best ever. Thanks to Doug Marsh for his innovative poster and Tom Cartwright for his worthy additions. Thanks go to other members who have personally contacted radio representatives at WMBI and WGN for publicity.

Also one member ventured over to Soleq Corporation and extracted a promise of two of their electric vehicles for demonstration for our Summer Event.

The antique auto show with 250 cars 1969 or older will be shown 11AM to 3:30PM at the Martin Mitchell grounds in Naperville on Sunday September 5, 1993. This is part of the Special Events for Naperville's Last Fling '93. Over 100,000 people attend these labor day weekend events. We have been invited to display 6 of our electric cars to provide an additional incentive for people to attend the antique car exhibit.

I received information that GM is testing Impact #4. Impact #4 has one motor instead of two. Top speed is 75 mph; driving range 70 miles city, 90 miles normal highway. Dual air bags. Regenerative and hydraulic anti-lock braking extend operating range up to 25%.

Research and the events of the past 20 years prove that Thomas Edison, Nikola Tesla, Charles Steimetz and even financier Samuel Insul were right. "Go Electric" is more than a slogan but a positive program for energy independence and a clean and healthful environment for all.

Ken Woods

MINUTES OF FVEAA JULY 16, 1993 MEETING

The meeting in the Student Resource Center at the College of DuPage was called to order by President Woods at 7:49 PM. Twelve members and one guest attended.

Treasurer Corel reported \$ 1155.16 in the Checking Account and \$ 2055.36 in the Savings Account. His report was unanimously approved.

Reading if the June 18th meeting minutes was suspended, pending their publication in a future

issue of the Newsletter.

President Woods asked for members needing nameplate badges. He will report on badge cost at the next meeting.

President Woods introduced the topic of newsletter production and distribution. There have been several reports from out-of-town members that they have failed to receive recent issues. During 1993, the newsletter was issued in Jan, Feb, Mar-April (combined), and May.

Technical difficulties prevented preparation of the June issue.

The following responsibilities for newsletter content, preparation, and mailing were approved after a general discussion:

1. The Editor is responsible for newsletter content and mailing label preparation.
2. The President is responsible for preparing the PRESSEZ article which is intended to inform members of subjects scheduled for the next meeting.
3. The Secretary is responsible for the minutes which reports on topics covered at the last FVEAA meeting.
4. Any person with material for the newsletter is responsible for sending this information to the Editor within 10 days following the most recent meeting.
5. The Treasurer is responsible for maintaining an up to date list of paid membership eligible to receive newsletter mailings. He will advise the Editor of new member additions.
6. The Publisher is responsible for duplicating and mailing each newsletter in time for local delivery by the Wednesday preceding the next meeting.

In addition to the above, the membership noted that changes in titles on the newsletter should be made to reflect current positions.

Member Delmonico offered 1-pound containers of general purpose grease for use on battery terminals to members for \$ 1 at the next meeting.

President Woods announced the FVEAA Summer Event would be August 21 in Building K at the College of Dupage and in Lot 11. It is being co-sponsored by the Illinois Solar Energy Association (ISEA). Speakers and topics to be presented are as follows:

- 10 AM Exhibit set up and car display completed.
- 10:00 Howard Allen (ISEA) will open the meeting and presentations.
- 10:30 Presentation by President Woods on "Why consider an EV"
- 11:00 Jim Hartley (ISEA) will present "Photovoltaic electricity".
- 11:30 Lunch period and demonstration rides.
- 1:00
- 1:00 PM Secretary Shafer will cover "Converting a Mazda RX-7".
- 1:30 Speaker from CECO will present "Nuclear-produced electricity supply for EVs in Northern Illinois."
- 2:00 Professor Francis (ISEA) will speak on photovoltaic electricity for transportation purposes.
- 2:30 Editor Marsh will cover the current state of commercial EVs.
- 4:00 Adjournment and clean up.

Member Clark announced he has extra copies of the Earth Options catalog.

The meeting was adjourned at 10:30 PM.

Submitted by,

William H Shafer
Secretary

August 1993 Want Ads

WANTED

A USED Converted to electric car or a USED electric/gasoline or diesel hybrid converted car/small pickup truck.

Contact: Charles Test 2710 2nd Avenue South Minneapolis, Minnesota 55408 (612) 874-8531

1981 VW DIESEL RABBIT AVAILABLE FOR CONVERSION

Guest Richard Ray, an architect and member of the Illinois Solar Energy Association announced at the April meeting that he had a 1981 diesel VW Rabbit with over 100k miles that developed a bad engine which would require about \$ 3000 to replace. He is willing to sell the car for \$ 150 or donate it to a FVEAA member willing to undertake a conversion project. Anyone interested should call him soon at (708) 447-1899.

This is the second VW diesel Rabbit that developed engine trouble which has been brought to the attention of the FVEAA. Wonder if there is a failure pattern ?

WANTED

A used electric corded or cordless push mower. Preferably working. Contact Doug Marsh (708) 879-8008

EVs On The Market

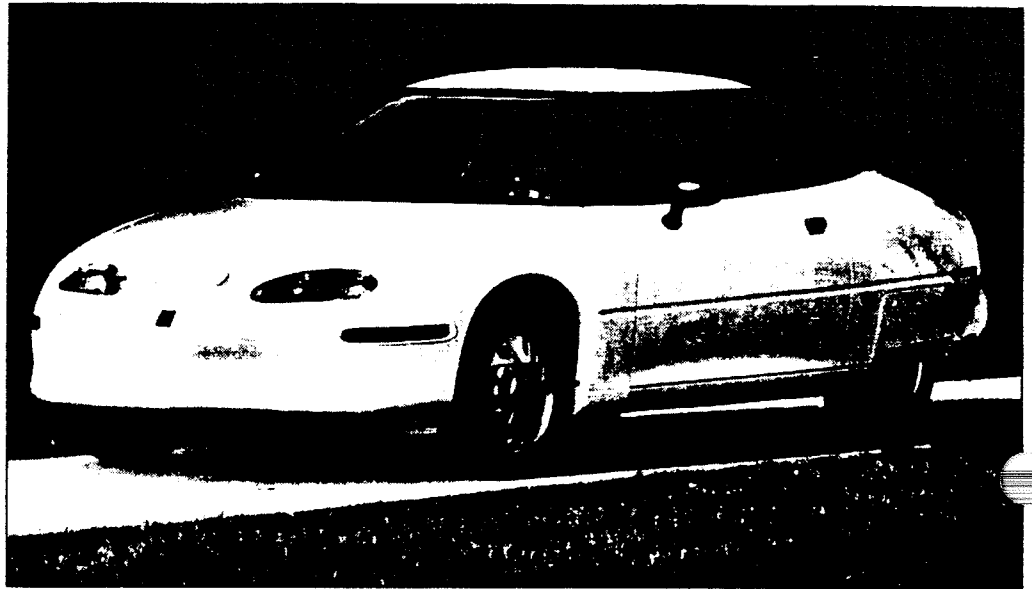
Today and in the Future

by Doug Marsh
& Nancy Hazard

ELECTRIC VEHICLES! The quiet emission-free dream machines we've all been waiting for! They may not be available at your favorite auto dealer, but you can find one today if you're willing to order one, either direct from the company, or from one of two or three dealers around the country. And beginning June 30 of this year, EV buyers will receive a tax rebate of 10% of the sticker price up to \$4,000, as defined by the 1992 Energy Policy Act.

Although sticker prices are still high, and driving range between battery recharging is still limited to 50-100 miles, the electric vehicle can be a great second car for daily commuting, shopping and errands. And the high initial cost is offset by reduced operating costs, the elimination of tune-ups, oil changes, replacement of exhaust systems, and longer vehicle life. Technical advances will most likely result in more efficient energy storage systems, increasing the range of electric vehicles. These advances can easily be incorporated into the EV that you buy today. (See side bar page 20.)

The emission benefits of electric vehicles were recognized by California's 1990 Clean Air Act. The EV market is being driven by California regulations dictating that major auto manufacturers produce ever increasing numbers of EVs starting in 1998. Many Northeast states have adopted, or are in the process of adopting, similar regulations. Arguments that EVs merely move pollution to the power plant have been countered by studies that demonstrate a 30-90% reduction in emissions, depending on the fuel and technology used at the power plants. Federal and industry research dollars are being spent to develop energy storage systems for electric vehicles which will allow them to travel longer distances between charges.



"Impact III," GM's newest electric vehicle, features power windows, door locks and side mirrors, dual air bags, cruise control, AM/FM stereo cassette radio with CD player and electrohydraulic power steering. The sporty two-seater accelerates from 0-60 mph in eight seconds and has a range of 100 miles. (See page 24 for more on the Impact III.)

TODAY, both small and large car manufacturers are offering electric conversions—production gasoline cars that have been converted to electric propulsion. Most major car companies have developed and shown concept prototype vehicles, which are purpose-built electrics, but none of these are currently available in this country. Of the electrics available today, three small EV companies in the United States have offered cars to the general public for several years, and there are also two conversion kits on the market. The big three, in 1993, are each offering 50-100 EVs to businesses with fleets.

Two to five new companies are also hoping to make offerings in 1993. European companies, such as Fiat, Peugeot, Renault, and VW offer a limited number of EVs to the European market, with plans to enter the U.S. market in the late 1990s, while the Japanese companies tantalize the press with announcements of quick charge EV systems, but consistently refuse to announce plans to enter the market. Electric buses have also been introduced by two companies in the United States. Following is a snapshot of the EV market today.

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EVs, From the Big Three, continued

General Motors Corporation's purpose-built *Impact*, which debuted in 1992, has a demonstrated 0-60 in 8 seconds, squashing the perception of electrics as slow, sluggish and ugly. Powered by 32 10-volt lead acid batteries and twin 57 hp AC motors driving the front wheels, the *Impact III*, originally targeted for the general market, will be sold to fleets for over \$100,000 in 1993. GM has also displayed a concept electric hybrid van, the *HX3*.

Conceptor Industries of New Market, Ontario, Canada, has produced and sold the G-Van to fleet users since 1991. The G-Van uses a GM van body and has a 50 mile range.

EUROPEAN AND JAPANESE CARS

BMW has built two concept cars, the *E1* and *E2*, the second aimed at the American market. With sodium sulfur batteries, and a single DC motor built by Unique Mobility of Colorado, BMW boasts a potential range of 270 miles and a top speed of 75 mph up a 4% grade. Production is scheduled for the 1990s.

Clean Air North America, Laguna Hills, CA, chosen by California to develop an EV for the LA market in 1991, has produced only a concept vehicle to date. A creative hybrid electric built by a Swedish/British company, the hybrid design is unusual in that the internal combustion engine is used to power the wheels in parallel with the electric motor. If financing is attained, we can expect to see a car in 1993 with all the amenities of AC, heating and a CD player and phone for \$30,000. Range: 60-150 miles.



The Volvo Environmental Concept Car is designed to function as a zero emission vehicle when the motor operates on power supplied by on-board batteries. In "hybrid" mode, a turbine engine drives a high speed generator, allowing the motor to deliver up to 95 hp and a range comparable to today's conventional gasoline powered cars.

Nissan America's concept *FEV* (*Future Electric Vehicle*) boasts a 6 minute recharge of the vehicle to 40% of its battery capacity, using Nippon's 400 volt charging system. With performance similar to GM's *Impact*, the *FEV* is not slated for production.

Toyota's *Town Ace Van* prototype van, produced in partnership with Chuba Electric, was unveiled in 1992.

Volvo's concept electric hybrid car, the *ECC*, was unveiled at the 1993 LA auto show. Range of the electric-only mode with NiCd battery pack is 60-80 miles with a projected 450 mile range using the internal combustion engine as a range extending generator. No production plans have been announced.

VW has one of the most aggressive EV programs in the world logging large quantities of road mile experience in their three EV and hybrid concept vehicles including the *Chico*, *Golf Hybrid*, and *Jetta CitySTORMer*. The VW/SWATCH partnership to produce an inexpensive EV was scrapped in early 1993, but each are independently pursuing EVs, with many different configurations of NiC and sodium sulfur batteries, and diesel engines. Production data and plans have not been announced at this time.

EVs NOT AVAILABLE ON THE U.S. MARKET

In Europe, manufacturers such as Fiat, Renault, Citroen, Peugeot, and Opel may well see the U.S. EV market as their ticket to return. Although many Europeans look longingly at the markets being created by state and federal legislation in the U.S., there are a number of cities in Europe which have restricted, or are planning to restrict, all inner city auto traffic to EVs. The laws are largely driven by pollution that is eroding historical architectural monuments and creating unhealthy conditions for inhabitants. Rolls Royce and Mercedes Benz also have active EV programs.

In Japan, all major manufacturers have aggressive EV programs. Electric utility companies are actively involved in developing EV prototypes, and the Japanese Trade Ministry, MITI, heavily subsidizes EV research and development.

The emergence of small twin seat commuter vehicles in Europe, often referred to as neighborhood vehicles or station cars, is also an interesting development. Not licensed to travel on highways, the *City-el* (formerly *Mini-el*) and *Horlacher* have each sold over 1,000 cars, and fill an important need in Europe and are currently being tested in California. ☼

*Author of "Electric Vehicles Unplugged!"
Douglas F. Marsh established Sebago
Technologies in 1989 for the development
of appropriate technologies. He is Vice
President of Engineering at Spectrum
Companies Intl. Ltd.*

*Nancy Hazard, Associate Director of
NESEA, has been promoting electric
vehicles since 1990, as director of
NESEA's transportation programs.*

Facts About Electric Vehicles

What is an electric vehicle?

An electric vehicle (EV) draws its power from electricity stored in batteries, instead of from the combustion of fuel. EVs include golf carts, industrial trucks, and full-sized passenger cars and trucks.

Why drive an EV?

Convenient: EVs do not need tune-ups, oil changes, mufflers, fuel pumps, carburetors, etc. EVs create no exhaust fumes, and use no gasoline, coolant or motor oil.

That's good for the environment and it also means less hassle for the owner: no smog inspection needed and no complex and expensive emission control system to replace.

Clean: EVs are cleaner than internal combustion vehicles, even when the pollution from the power plant is considered.

Efficient: An electric motor can convert energy into motion more efficiently than a combustion engine (which dissipates 75% of the energy in gasoline as heat). No energy is wasted when the EV is sitting in stopped traffic. *In Los Angeles, cars stuck in traffic jams waste 72 million gallons of gasoline annually.*

Quiet: EVs operate almost silently.

Durable: Even the best-kept gasoline car will eventually need a new engine. An electric motor has a virtually infinite lifespan, needing only an occasional change of brushes, which costs around \$50.

What does an EV cost?

Today's EVs are either kit cars or gasoline cars that have been converted to electric power. The cost of conversion ranges between \$5,000 and \$8,000 for components and batteries and takes 200 hours if done by a hobbyist. For comparison, replacing a gasoline car engine costs around \$2,500. Consider also the differences in operating costs and the value of the time saved by not needing tune-ups and repairs.

Operating costs

An EV costs about 3-5 cents per mile for electricity, depending on the efficiency of the drive train and the cost of the electricity. Batteries are

replaced every two years or so, adding another 4 cents per mile. A car rated at 30 mpg operates at around 4 cents per gallon. A gasoline car also requires additional maintenance, between \$1,000 and \$1,500 per year (10-15 cents per mile), which an EV does not need.

How fast can an EV go?

Most EVs can do highway speeds of 55 to 65 mph. The speed record for an EV is 175 mph.

How far can an EV go before recharging?

The typical range is between 40 and 80 miles, depending on the type of vehicle, the terrain and the driver's skill at driving efficiently. Some EVs can exceed 100 miles on a single charge. The documented distance record is 215 miles, using conventional technology and lead-acid batteries. Note that most drivers in the U.S. average less than 30 miles per day.

How long does it take to recharge an EV?

Overnight: 6 hours at 220 volts, 10-12 hours at 110 volts, assuming a total discharge. Since the demand for electricity is lower after midnight, some power companies will give EV owners special "off-peak" rates for nighttime charging. If the EV has an onboard charger, it can be recharged during the day. Some cities have installed electrical outlets in easy reach of specially designated EV parking spaces.

What if I take a long trip?

An EV is basically a commuter vehicle or second car, not a long-distance travel car. Unless you travel by car a great deal, it is actually cheaper to rent a gasoline car for occasional trips than to own and maintain one.

Can I charge my EV with solar panels?

Yes, but you won't get more than a couple of miles of range per day from an affordable set of panels. A solar array can be set up at home and used to charge a battery pack,

when then charges the EV at night. Panels on the car are designed primarily to give lead-acid batteries a trickle charge. This adds life to the batteries.

How many batteries does an EV use?

Typically, 12 to 20. Unlike standard 12-volt car batteries, the EV batteries are 6-volt deep-discharge batteries, specially designed to be heavily discharged and recharged repeatedly. A 72-volt system is considered the minimum necessary for an on-road EV. Some EVs have 120 volts and experimental EVs have gone higher to increase their range. The advantages of added voltage must be balanced against the increased weight and size of the battery pack.

How often must the battery pack be replaced?

In general commuter usage, the batteries will last about four years. Over this same interval, a typical gasoline car often requires major engine work, such as a new timing belt.

How much passenger room does an EV have?

Most are two-person cars, but many have room for four. Most of the EV components can fit in the space where the gasoline tank and engine were.

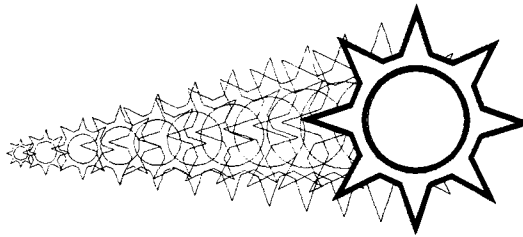
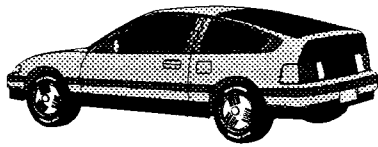
Prepared by Shari Prange and distributed by EVIA to inform the public about alternatives to gasoline.

The Electric Vehicle Industry Association (EVIA) seeks to foster goodwill and exchange ideas between the public and the electric vehicle industry. EVIA publishes various brochures on safety and other topics of interest to EV owners. Send a self-addressed stamped envelope for an information packet:

EVIA, Box 59, Maynard, Mass. 01754
(508) 897-6740 (phone/fax)

The logo for the Electric Vehicle Industry Association (EVIA) features the word "evia" in a bold, lowercase, sans-serif font. A stylized lightning bolt is positioned above the letter 'i'.

ELECTRIC VEHICLE INDUSTRY ASSOCIATION



ELECTRIC CAR & SOLAR SUMMER EVENT

AUG. 21, 1993

10:00 AM TO 4:00 PM

COLLEGE OF DUPAGE

PARKING LOT M

CORNER OF 22nd AND LAMBERT WHEATON, IL

-  SLIDE SHOWS
-  PRESENTATIONS
-  TEST DRIVES
-  EXHIBITIONS
-  DEMONSTRATIONS

SPONSORED BY:

FOX VALLEY ELECTRIC AUTO ASSOCIATION
& ILLINOIS SOLAR ENERGY ASSOCIATION