

## FVEAA NEWSLETTER - APRIL 1996

**NEXT MEETING - Friday, April 19 at 7:30 PM will be in Room 161, Building K  
at the College of DuPage, Southwest corner of 22nd Street & Lambert Road**

**DISCUSSION TOPICS - 1. Project Update 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 which 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 March will be \$16.

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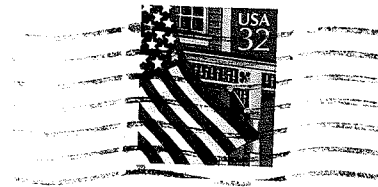
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**ADDRESS CORRECTION REQUESTED**

## MINUTES OF MAR 15 MEETING

The meeting at the College of DuPage was called to order at 7:30 PM by President Woods. Seventeen members attended. The minutes were approved.

Treasurer Corel reported \$ 2186.70 in the savings account, \$ 2957.63 in checking, for a total of \$ 4144.33. His report was accepted.

Guest Robert Loescher of Pewaukee, WI was introduced and joined the FVEAA. He plans to convert either a BMW or pickup truck.

President Woods announced that the FVEAA would participate in four 1996 Earth Day Events: He will be at Northwestern U., Member Mitchell will be at Highland Park, Member Ness will exhibit his new electric bicycle at Beecher and a member of the Illinois Solar Energy Group will have FVEAA material at Itasca.

He also announced that Member Shafer and Bob McKee will be interviewed on a WYLL (FM 106.7 FM) at 10:30PM on April 18.

Project Manager Munroe reported on the Nissan Project current status. The car has been moved to Ed Meyer's place for the remaining work. Ed has updated the cost sheet that will be in the April Newsletter. Ed noted that our decision to build a Member Ken Myer's - designed FET controller, battery charger, and DC-DC converter will significantly reduce the cost of the project. Mechanical work on the controller by Members Vana, Munroe, and Krajnovich is 80% complete.

There was discussion of material and fabrication of the splash pan. Member Stevens volunteered to take on this task.

There was discussion of how to best use the 12-volt gel-cell batteries for the test. These have a different lug than the post-type used on GC-2 golf cart units.

There was also brief discussion of the vacuum pump and instrumentation. Member Shafer was unable to locate a unit in a salvage yard. Member Aarvold offered to work on this component. Member Myers thought a calibrated LED display could be used for instrumentation.

Member Mock brought a pot box that he offered to donate for the project.

The AC charging plug was discussed. Two receptacles will be installed; a 240-volt unit under the gasoline take cover plate and a 120-volt at a different location. The need for interlocking and ground-fault interrupter was discussed. This is required to meet National Electric Code requirements.

Member Corel brought a "test" controller that included three chopper circuits.

Member Ed Meyers reviewed the condition of a 1993 Accura for a possible conversion project. He reported the car has been abused. It would require front-end replacement and other work. It was decided not to use this car for a future project.

The EV Policy statement was tabled for future consideration after discussion.

President Woods announced that FVEAA "Lost Member" Helenowska is offering to give a Fiat X-19 to a member who will convert the car.

The meeting was adjourned at 10:16

Submitted by Secretary Dave Aarvold

## PRESSEZ

A progress report by Bob Monroe and the COOP committee will be made at our next meeting.

We are looking for a volunteer to work with ISEA board member Bob Doane, retired science teacher and U.of C. grad, class of '39, for the Earth Day event on Saturday April 20 at the Spring Brook Nature Center in Itasca.

Planning for the Downers Grove Heritage Festival to be held on Sunday June 30, 1996 from 12:00 noon to 10:00 PM will be discussed. ( This is the target community that we designed a program for the introduction of electric vehicles in the near term 1993 to 2003)

The remaining time will be used to discuss concerns of our membership.

KEN

## RECENT ARTICLES ABOUT EV'S

**Collect-A-Mundo. Chicago SunTimes 2/29/96 (Auto Times Section)** This is an article about FVEAA Member Larry Claypool. He is noted for his restoration efforts on Covairs but last year he started to collect electric cars with acquisition of a 1979 Suburau electric van. The article notes this vehicle is a Jet Industries conversion of a Suburau Sambar van (that had sliding doors on each side that predated Chrysler 1996 minivan design). The Federal Government used the van in a test project. Weight of 18 lead-acid batteries, an undersized clutch, and poor performance eventually doomed this test. Many were eventually donated to high schools for shop course uses where Larry bought his vehicle. FVEAA Member Helenowska also has one.

**Electric Vehicles Planned By the Utility Industry. New York Times, Business Page 1, Date unknown.** A conversion van was unveiled by the Electric Power Research Institute, an R&D organization funded by contributions from most electric power utilities in the US. It is based on an improved version of the popular Chrysler minivan. It uses nickel-iron batteries that are 39% lighter than standard lead-acid batteries storing the same quantity of electrical energy. Another entry is based on a GM G-van and converted by Magna International in Toronto with financial support from GM and from an electric power utility, the Southern California Edison Co. This van uses British Chloride lead-acid batteries. The G-van carries a \$32,000 price tag, an initial cost that will be at least partially offset by lower operating and depreciation chargers

The advantages for the utility sponsoring organizations is the utilization of nighttime energy for recharging. A spokesman for Southern Cal noted that company has enough unused nighttime generation to charge 600,000 of the G-vans from a 240 volt, 30-amp branch circuit that is commonly used for electric dryers. This has a gross annual revenue potential of \$90 million for the company

## RECENT ARTICLES ABOUT EV'S (Continued).

**Car Wars. Amicus Journal, Winter 96, Page 31.** According to the article, last May the Mobil Oil Co ran an ad in the New York Times claiming the electricity generation required for electric cars would vastly drive up energy consumption and emission of pollutants. The car industry also noted the Carnegie-Mellon study that they financed concluded there could be a serious health threat from lead mining, smelting and recycling. Neither assertion has much legitimacy according to experts who have examined these claims. These assertions are a part of the battle against the 1998 deadline for zero emission vehicles. Detroit and Big Oil argue that EVs will be, "the Edsels of the twenty-first century. A mailing sent to California citizens wars that electric rates will soar due to the EV mandate.

The key; to EV acceptance is volume production to reduce the initial price. An example is a comparison of 10000 production units. A conventional drivetrain costs \$11,000 while the electric version is estimated to be only \$2000 according to the article. Foreign manufacturers have announced plans to start volume production of electric vehicles.

**GM Electric Vehicles Slated for Saturn Showrooms Fall of '96. GM Stockholder News, Page 3.** GM will be the first major automaker to market specifically-designed electric vehicles when the EV1, derived from the IMPACT, goes on sale this fall in California and Arizona Saturn Showrooms. A conversion of the Chevy S-10 pickup will be marketed in 1997 according to this announcement.

**GM will switch from lead-acid to NIMH batteries for The EV-1. Ward's Automotive News, Chicago Tribune, Date and Page unknown.**

**GM trying to be more electric. Chicago Tribune 2/4/90, Page unknown.** GM knows better than to market their electric car the IMPACT. Why not Crunch, Crash, Bend, Spindle, or mutilate asks Auto Writer Jim Mateja? It is acknowledged the car will make an impact on consumers.

GM learned a lot about the need for efficiency when it designed and entered, and won the 1987 solar race in Australia with their Sunraycer. That car only had a hair dryer's worth of energy on-board but managed to get up to 65 mph. That experience led to a GM decision to take another look at battery powered cars and the IMPACT resulted.

There is still considerable skepticism in GM about the public acceptance of a car with less than 100 miles single-charge range. They also believe there will be considerable resistance to a 30-35,000 sales price. GM expects the sales price for EV-1 to be in the \$20,000 range.

(Editor's note) This hardly qualifies as a "Recent" EV article. I had some extra space and found it interesting to read from our perspective in 1996. The clip must have been in somebody's archives for several years.

## FROM OTHER EV NEWSLETTERS

**EEVC, the Eastern Group** contained an editorial commenting on public perceptions of electric cars. It observed that economics, speed, acceleration, and appearance are the driving factors in car purchase decisions. Electric cars enjoy, at the best, a lackluster interest as long as gasoline prices remain cheap and supplies are available.

An article on ac motor failures noted that insulation breakdowns may be caused by the high rate-of-rise of a chopped dc voltage used in the inverter system. A 2 kv square wave at 20 khz applied to a wire twisted pair at 90C caused breakdown in 20 minutes.

**GLEAN, the Great lakes Group**, in their February newsletter noted that 92 utilities are committed to buy electric vehicles for 30% of their fleet purchases starting in 1998. Illinois Power and Central Illinois Public Service are listed but ComEd is not. These decisions were made in response to provisions of the 1992 Energy Policy Act. Many of these vehicles are expected to be conversions of GM's S-10 pickups. They report that Horizon batteries have been selected by Chrysler for their EPIC minivans. They also had an article on DAEWOO's (Korea) EV aluminum space frame development that weighs only 98 kg (216 lb). The platform is suitable for 2-passenger and small commercial vehicles.

**SEVA, the Sacramento CA group** in their February newsletter published a communication from a Maryland EV owner that appeared on the EV Discussion list. He reported the car handled well in the 6-inch snowfall but had a problem with the charger tripping out due to snow accumulating in the motor compartment after driving. Everything was o after drying things off.

**VEVA, the Vancouver Organization** in their February newsletter noted that Ballard Power systems in their city has ben awaked a \$8-million contract from Georgetown University to develop a methanol fuel cell bus engine. Two BC high schools will have entries in the Phoenix AZ Electrathon competition. Ovonic Battery Company has licensed Gold Peak (Singapore) company to market a NiMH battery that has been tested at 95 watthours/kg (43 wh/lb) for laptop computers. Sony is reported developing an EV version of their lithium-ion battery developed for camcorders.

**Future Drive, an Argonne Lab publication** in their Winter 95-96 issue featured the FutureCar competition challenge involving 12 universities. Each participant received \$ 10,000 in seed money and a 1995 Dodge Intrepid, 1996 Ford Taurus, or 1996 Chevy Lumina for a conversion platform. Each team is free to choose from 7 different fuels to meet an 80 mpg goal. They may use hybrid, or other advanced technologies. The competition will take place in June 17-24, 1996 and in 97 in Dearborn, MI. Wisconsin University in Madison chose a Koehler Command 25 engine in its Ford Escort hybrid entry for the 1995 competition. NREL has a World Wide Web site with an address

<http://www.nrel.gov/research/hev>.

## FROM OTHER EV NEWSLETTERS (Continued)

(Editor's Note) The preceding page was omitted from the March Newsletter. Fortunately it was still on the computer and I'm playing catch-up this month. The remainder is from this month.

**AVEA, The Australian Chaps**, in their Jan/Feb Newsletter featured a story about inductive charging exhibited at the Brussels Salon. The Inductran system is mounted in a pedestal that magnetically couples to a plate on the front of an EV. This is different than GM's version that uses a paddle inserted in a slot. Another interesting article reported use of a solar-powered bicycle ferry in the Netherlands that has 2-3kw, 48-volt electric motors, 2- 48-volt, 205 Ah batteries that store enough energy for 250 crossings, and solar panels that can provide enough energy for 150 crossings. According the SAE of Australia, Mercedes-Benz set a world-record of 100,000 km for its test vehicle that uses ZEBRA sodium/nickel chloride battery.

**EEVC, The Eastern Group**, in their March Newsletter announced an e-mail address and plans for a home page on the World-Wide Web. Their e-mail address is easternev@aol.com. The www page is <http://www.value.net/~pgc/eevc/>. The issue also contains an article on induction motor bearing failure that may occur when pulse-width modulator inverter are used. There are considerable harmonics in the output of these devices that may cause bearing heating and premature failures. Further details appear in the March, 1996 Transactions of the IEEE Energy Conversion Publication. (Editor's note - Former FVEAA member, the late John Newton, reported the South Africans got around this problem by using a seven-phase system rather than the usual three-phase arrangement.) The publication also reports that Aerovironment and Ovonic were winners at the Phoenix event held March 1-3.

**The Michigan Electrathon, Managed by Coopersville High School This Year** reported twelve high schools are entered in the competition At Coopersville.

**VEVA, The Vancouver Organization**, in their March Newsletter featured an article about to British Columbia High School' participation in the U. S. National Electrathon Competition. They shipped their car as "excess baggage" on America West Airline. That's innovation! The issue contains a listing of 23EV's that can be bought today in Switzerland. A useful article by Bob Batson on EV routine maintenance is worth noting.

## Events

**Earth Day Anniversary, April 21.** Locally-sponsored observances.

**Michigan Electrathon, April 27. Coopersville MI.** For info call (616)837-9753.

**1996 Tour de Sol, May 10-17, NYC-Washington.** For info call (413) 774-6051.

**1996 Ener\*Run, May 25-27.** For info call Les Adams, (501) 856-3877.

Page 2/2	Item Description	%	\$	Time
	<b>FVEAA Conversion of 1990 Nissan (Totals From Page 1)</b>		3351	414
	Install disconnection contactor			
	Controller selection, procurement & installation	90		35
	Replace rear springs **			
	Install potbox & connect to accelerator pedal	10		
	Install auxiliary battery			
	Install auxiliary wiring - connect to existing cabling. Test auxiliary systems.			
	Power brake design and associated components	30		5
	Select or build & install battery charger	25		10
	Install AC charging plug & connect to charger			
	Select or design DC-DC converter and install			
	Defroster & heater modifications			
	Install splash pan & rain deflectors	10	20	2
	Replace tires			
	Prepare electrical schematic			
	Prepare owner's manual			
	Obtain electrical title & license			
	Test drive car			
	Evaluate procedures taken in building car *			
	Evaluate project success *			
	Sell vehicle *			

\* Added 9/95

\*\* Added 4/96

April , 1996

Note - Page 1 not included in this Issue. Items are essentially complete, except for instrumentation.

# FOX VALLEY ELECTRIC AUTO ASSOCIATION (NISSAN CONVERSION PROJECT)

Report Date

03-14-96

## Balance Sheet

Expenses

Income

1	Car procurement	\$	550.00	1	Sale of unused engine components	\$	120.00		
2	Tow bar attachment	\$	75.00	2	Sale of Certificates	\$	4,200.00		
3	Repair body rust	\$	20.00 Estimate	3	Authorized transfer from treasury	\$	2,000.00		
4	Paint	\$	38.00 Estimate	4		\$			
5	Motor	\$	1,654.00	5		\$			
6	Controller (Curtis 123	\$	1,100.00 Estimate	6		\$			
7	Battery (trial)	\$	100.00	7		\$			
8	Battery (Permanent)	\$	639.20 Estimate	8		\$			
9	Main Charger (Ken My	\$	100.00 Estimate	9		\$			
10	Suspension Upgrade	\$	100.00 Estimate	10		\$			
11	Motor adapter plate	\$	114.66	11		\$			
12	Machined plate	\$	200.00	12		\$			
13	Broach to cut keyway	\$	51.55	13		\$			
14	Machine steel Hub	\$	320.00	14		\$			
15	Lifting eyebolt	\$	4.10	15		\$			
16	Misc. Nuts & bolts	\$	17.22	16		\$			
17	Power cable 2/0	\$	48.00	17		\$			
18	Clutch Disc	\$	32.59	18		\$			
19	Tow bar nuts and bolt	\$	6.41	19		\$			
20	Steering wheel & Ign.	\$	50.00	20		\$			
21	Motor shock mount	\$	24.70	21		\$			
22	Master relay	\$	- Owned	22		\$			
23	Circuit breaker	\$	- Owned	23		\$			
24	Pot-box (Home-built)	\$	20.00 Estimate	24		\$			
25	Auxiliary battery	\$	50.00 Estimate	25		\$			
26	Vacuum assist (brake:	\$	39.00 Estimate	26		\$			
27	DC-DC Converter	\$	450.00 Estimate	27		\$			
28	Electrical Meters	\$	- Owned	28		\$			
29	Heater	\$	100.00 Estimate	29		\$			
30	Splash pan	\$	20.00 Estimate	30		\$			
31	Seat Reupholstery	\$	97.39	31		\$			
32	Door pins & bushings	\$	28.05	32		\$			
33	Tire replacement	\$	75.00 Estimate	33		\$			
34	Headlight Repl. Assen	\$	75.00 Estimate	34		\$			
35	Licensing	\$	28.00 Estimate	35	Over-funding	\$	-92.13		
Total expenditure				\$	6,227.87	Total income		\$	6,227.87
Original Estimate				\$	7,000.00				