F.V.E.A.A. NEWSLETTER

APRIL 1986

MEETING NOTICE

The next meeting will be friday **APRIL 25th**, at *MID AMERICA FEDERAL SAVINGS* 250 E. Roosevelt Rd. Wheaton, Illinois. - Time - 7:30 P.M.

NOTE

Due to a schedule conflict at our meeting place, this months meeting will be held a week late as noted above. This is **NOT** an April fools joke. Remember - April 25th.

THE PRES SAYS

The Association's proposal for funding the development of our conversion kit package was presented at a public hearing on the 24th of March. A copy of the testimony is included in this issue for your information. Also included is a copy of the SUN-TIMES article which summarizes the situation.

Do we have a chance? If the uniqueness of spending proposals were the only criteria, I believe we would fare well judging from the remainder of the suggestions presented at the hearing. However, there are other factors.

We will be discussing our future actions at the next meeting and your discussion will be helpful. We will also begin the tutorial on "PUTTING PERFORMANCE IN YOUR ELECTRIC CAR".

NEWSLETTER ITEMS & DEADLINE

Any club member wishing to submit articles, drawings, want ads, editorial comments, special notices, etc. should make sure it reaches me no later than 2 weeks prior to the next meeting (about May. 5th) in order that it be published in the May newsletter. Send to: John Emde FVEAA Editor, 6542 Fairmount Ave. , Downers Grove, Ill. 60516

F.V.E.A.A.

FOX VALLEY ELECTRIC AUTO ASSOCIATION
624 PERSHING ST. WHEATON, ILL. 60187

FIRST CLASS

ADDRESS CORRECTION REQUESTED

Page 54
CHICAGO SUN-TIMES
Tuesday, March 25, 1986

Funds sought to electrify junker autos

By Dean Schott

When state officials sought suggestions on how to spend a recent $96 million refund from the Exxon Corp., William H. Shafer of Oak Park yesterday asked for a small piece to give his pet project a jolt.

For $200,000, Shafer and his pals at the Fox Valley Electric Auto Association believe they can show the state how 10 junk heaps can be transformed into electric-powered cars.

The 40-member association already has done wonders on 14 autos whose gas-powered engines "have given up their ghosts." Converted to electric power, a couple of Fiats, a Dodge Omni and a Volkswagen Beetle can make daily trips of 25 to 40 miles each, Shafer said.

The money is available because the federal courts ordered Exxon to refund a total of $2.1 billion to the states for illegally boosting its petroleum prices in the 1970s.

Under federal rules, the money must be spent in each state on energy assistance, conservation or weatherization programs. Public hearings are being held to determine the best ways to use the money in Illinois.

"We estimate the annual gasoline savings for 20,000 electric-car conversions would be 6 million gallons," Shafer told a panel of government officials who will recommend how the Exxon money will be spent.

Does he seriously think he can pry the money from the fists of state bureaucrats?

"I have no idea, but the association members said last Friday, we should try," said Shafer, 64, an electrical engineer in Commonwealth Edison's research department.

But the little guys are up against the big boys on this one. Edison, Peoples Gas, Northern Illinois Gas, City Hall and the Illinois State Chamber of Commerce all testified at the public hearing at the State of Illinois Center.

They want the money from Exxon overcharges spent on energy assistance checks and weatherization projects for low-income Illinois families.

Those are the likely recommendations that will be made to the General Assembly and Gov. Thompson later this spring.

If Shafer's association doesn't get the money, "we'll probably not be able to pull it off," he said.

Their fallback position is to think smaller. They will convert one car to electric power, look for a charity to co-sponsor a raffle and split the proceeds.

EVs in the Nation's Future

A study entitled "The Role of Electric Vehicles in the Nation's Energy Future" was published in November by the federal government. Written by three members of Argonne National Laboratories (ANL), the report examines this country's transportation fuel outlook; our own petroleum production outlook and our dependence on foreign oil, and the future cost of substitutes for that oil, including oil from shale and methanol from coal.

The report goes on to compare the EV with the internal-combustion engine on an economic basis. Performance requirements and break-even costs were established, along with prospects for meeting those requirements through future potential battery developments.

The report states the current standard 50-mile range of Evs, but then looks ahead to the future. "Battery technology," the study says, "appears to be on the threshold of enabling economical vehicles with a 100-150 mile range. Continued development of sodium/sulphur, lithium-metal/sulfide, zinc/bromine, zinc/chlorine, iron/air and several other battery technologies may enable cost-competitive EVs with a 100-150 mile range during the 1990's. On the other hand, a major breakthrough in battery technology is requried for EVs with a 250-mile range. In particular, substantial reductions in battery cost ($/kWh) are required, regardless of the improvement in specific energy. The EV represents an important long-range transportation alternative for the U.S. Compared with the enormous investments in new conversion facilities required for synthetic fuels, the effects of Evs on the nation's electrical supply system will be modest. Nevertheless, the market and technological risks associated with their development call for continued government support." □

ADVANCED VEHICLE NEWS/FEBRUARY 1986

FVEAA
fox valley electric auto association inc.
2S643 Nelson Lake Road
Batavia, Illinois 60510

I am william H Shafer, since November the President of the Fox Valley Electric Auto Association (FVEAA). The purpose of my testimony today is to present the recommendation of our Organization that a small portion of the funds which are the subject of today's hearing be allocated for the development of a package useful for the recycling and conversion of conventional automobiles for electric drive.

Who are we?

The FVEAA is a not-for-profit Illinois corporation which was organized in 1975, following the appearance of lines at gasoline stations resulting from the first Arab oil embargo and the unavability of petroleum fuel. The stated purpose of the FVEAA is to demonstrate to the public the capability of electric cars. We have done this by using and displaying the electric cars that FVEAA members have individually built using low-cost "surplus" components. There are currently 40 active members of the FVEAA who regularly drive their 14 electric cars.

Over the years the emphasis of our organization has changed. Originally, there was a high interest when the electric car was seen as an alternative to the petrol-based car. This was the time we had several hundred persons interested in our activity, Today, with the oil surplus and with our decade of experience in the construction and operation of electric cars, we see then as a supplement to rather than a substitute for the conventional car.

What has been our past record?

The electric cars which our members have built were found to be adequate for many short-range transportation missions but the cars have performance limitations. This is due to several factors. The major limitation is the energy-storage capability of the batteries which limit our cars to a single-charge range of 20-40 miles. Our cars do not utilize optimum components since we have used surplus components which are no longer available.

What would we like to accomplish?

Our experience with building and operating electric cars indicate there is an interest in a well-designed conversion package. We estimate a national total of about 20,000 persons similar to us who would be interested in building and operating his own electric car.

fox valley electric auto association inc.
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The technical skills of our members and their electric car construction and operating experiences have been utilized to produce a preliminary design for an electric car conversion package. We believe this package would be interesting to persons wishing to build their own electric car conversion. We are seeking financial support to translate our paper design into working vehicles which can be performance tested and evaluated.

How does the FVEAA proposal meet Program requirements?

It is our understanding that the federal requirements for state spending of the gasoline overcharge refund emphasize NEW conservation programs. Our proposal differs from previous electric car development efforts. These have emphasized either the construction of electric cars with new designs or the commercial conversion of new automobiles. Neither of these attempts has been successful because of the high cost of the resulting products.

Our program provides for the recycling of cars that would otherwise end up in the junkpile. By using an individual's initiative to remove the engine and other gasoline components, and substituting a well-designed conversion package, these cars can be rebuilt into useful electric vehicles. Conversion equals conservation of these cars. This system avoids the high costs experienced with previous programs. Also, the converter-builder can hardly complain about workmanship.

Another significant advantage of the FVEAA program is life extension of the family's primary gasoline-fueled car. Our experiences with using electrics indicate they are superior in short-range driving missions. This short-range use deteriorates conventional cars because the engines never get up to operating temperature. The $10,000 new gasoline car will not have to be replaced as often when supplemented with a converted electric.

The funding and successful completion of the FVEAA project also will decrease the use of petroleum fuels. We estimate the annual gasoline savings for 20,000 electric car conversions would be 6-million gallons, based on driving the electric 20 miles per day for 300 days each year.

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What are the funding requirements for the FVEAA proposal?

The FVEAA proposal envisions the building and testing of ten electric drive conversion packages by FVEAA members. The package will include an electric motor specifically designed for the application, a simple control system, a transmission coupling unit, and a battery charger. These components can be used to replace the gasoline components in a recycled, 2-3000 pound conventional car.

The FVEAA also proposes to conduct benchboard dynamometer tests of a prototype unit. After this is completed, ten final design conversion packages will be assembled and sold at a concession price of $1,000 for each package to indivduals agreeing to build, test, and report operating experiences with the package. Following the successful completion of the ten-car test, the FVEAA may decide to make the package available to others wishing to build their own electric cars at a reasonable cost and be freed from complete dependence on petroleum-based transportation.

The FVEAA program can be completed at a modest cost because we intend to utilize the volunteer labor and technical capabilities of our members. There will be no costs for building the ten prototype conversions. The finished cars will be available for public demonstrations, carrying out the charter of the FVEAA.

What is the recommendation of the FVEAA?

The FVEAA recommends that $200,000 plus an amount to cover the program's State administrative costs be designated for development of an electric car conversion package. We are confident of our abilities, but may not be the only group capable of doing the job.

We therefore also recommend that the State invite proposals from Illinois groups to achieve the goals we have outlined here. We recommend that these proposals be evaluated by the DENR for technical content and that a 3-year grant be made to the organization evaluated as best able to bring about an electric car conversion package. We think it quite appropriate that oil company overcharge money be used in this fashion.

William H Shafer
308 South East Ave.
Oak Park, Ill 60302
383-0186 or 294-2914

Renault Intros Two Commercial EV Models

Renault's Research Directorate in France has announced the introduction of two commercial EVs, based on two conventional models of the Renault Express line. The company says the models, an estate car and a van, are part of a trial program to "study the possibility of building electric and conventionally-powered internal combustion engine vehicles in the same production line."

The vehicles have a range of 65 miles in urban use, and a maximum speed of 65 mph, according to Renault. They are intended for distribution and deliveries in urban areas. The company said that "with a useful load of over 65 cwt and a load volume close to that of their internal combustion-engined equivalents, the Electric Expresses can be regarded as genuine delivery vehicles, especially well-adapted to use in urban environments."

The Electric Express is equipped with a separately excited DC motor which provides a maximum power output of 24 kw (18 hp) when supplied at 112V. Motor control is provided by a thyristor chopper, and in braking the model allows regeneration until the vehicle has come to a halt. Renault says, "in a typical urban cycle (SAE J227c) this system can save up to 20 percent of the total available energy."

The first trial batch of Expresses is equipped with nickel/iron batteries, although nickel/zinc batteries are likely to be tested in later units. Renault says, "18 modules of 6.26 V and 150 Ah make up a battery pack of 112 V nominal. Each module weighs 18 kg (40 pounds), giving an energy density of 52 kWH/kg (24 Wh/lb)." The 18 modules are composed of three blocks of six at the rear of the vehicle, in space normally filled by the fuel tank and spare tire (the latter is mounted under the hood). A 10 kW charger is also located under the hood.

Renault hopes to see the market for the Electric Expresses grow. "The new vehicle offers characteristics and performance with a special appeal to fleet operating needs. The next stage in their development could therefore see Renault placing them on sale — with series production taking place on the same lines as those used for internal-combustion models."

The Electric Express is not Renault's only entry into the EV market. They have also announced that ten Electric Master Vans, another commercial vehicle, will be run "experimentally" by the municipal services department of the French town of Chattellerault. Both projects are the result of a commercial EV effort begun by Renault in 1980. □

F.V.E.A.A.

HAMFESTS 1986

April 27	COMPUTER CENTRAL Holiday Inn 800 Irving Park Rd. Itasca, Ill 312 940-7547 9:30 AM
May 3	SWAPFEST Circle B Rec. Center Hwys. 60 & County I Cederburg, Wisc. 414 284-3271 8:00 AM $3.00
May 4	DEKALB HAMFEST Sandwich Fairgrounds Suydam Rd. North of Rt. 34 Sandwich, Ill. 8:00 AM $3.00
May 4	HAMFEST Kankakee County Fairgrounds Rt. 45 South Kankakee, Ill. 815 933-1942 8:00 AM $3.00
May 18	HAMFEST Palace Hall Central & Cermak Cicero, Ill. 7:00 AM $3.00
June 8	29 ANNUAL HAMFEST SantaFe Park 91st & Wolf Rd. Hinsdale, Ill. 6:00 AM $3.00
July 12-13	INDIANAPOLIS HAMFEST Marion County Fairgrounds I-465 & 174 Indianapolis, Ind. 6:00 AM $5.00
July 13	HAM & COMPUTERFEST American Legion Ogden & Saratoga Downers Grove, Ill. 312 964-5529 8:00 AM $3.00
July 27	BELVIDERE HAMFEST Boone County Fairgrounds Belvidere, Ill. 8:00 AM $3.00
August 24	COMMODORE COMPUTERFEST Kane Co. Fairgrounds Randall Rd St. Charles Ill. 898-3066 8:00 AM $5.00
Sept. 14	B.A.R.S. HAMFEST SantaFe Park 91st & Wolf Rd Hinsdale, Ill. 312 985-0527 8:00 AM $3.00
Sept. 20-21	SUPERFEST 86 Expo Gardens W. Northmoor Rd. Peoria, Ill. P.O.Box 3461 Zip 61614 $4.00
Sept. 27-28	RADIO EXPO Lake County Fairgrounds Rt 45 & 120 Grayslake, Ill. 6:00 AM $4.00
Oct. 12	SWAPFEST Waukesha County Expo Ctr. Hwys. FT & J Waukesha, Wisc. 8:00 AM $3.00
Oct. 18-19	CONVENTION/HAMFEST Norris Sports Center St. Charles, Ill. 8:00 AM $4.00
Nov. 2	HAMFEST Lake Co. Fairgrounds Rts 45 & 120 Grayslake, Ill. 7:00 AM $3.00

Times are when gates open to the public. Prices are 'at gate' prices and may or may not include both days on two day events. Some advance ticket sales may be discounted.

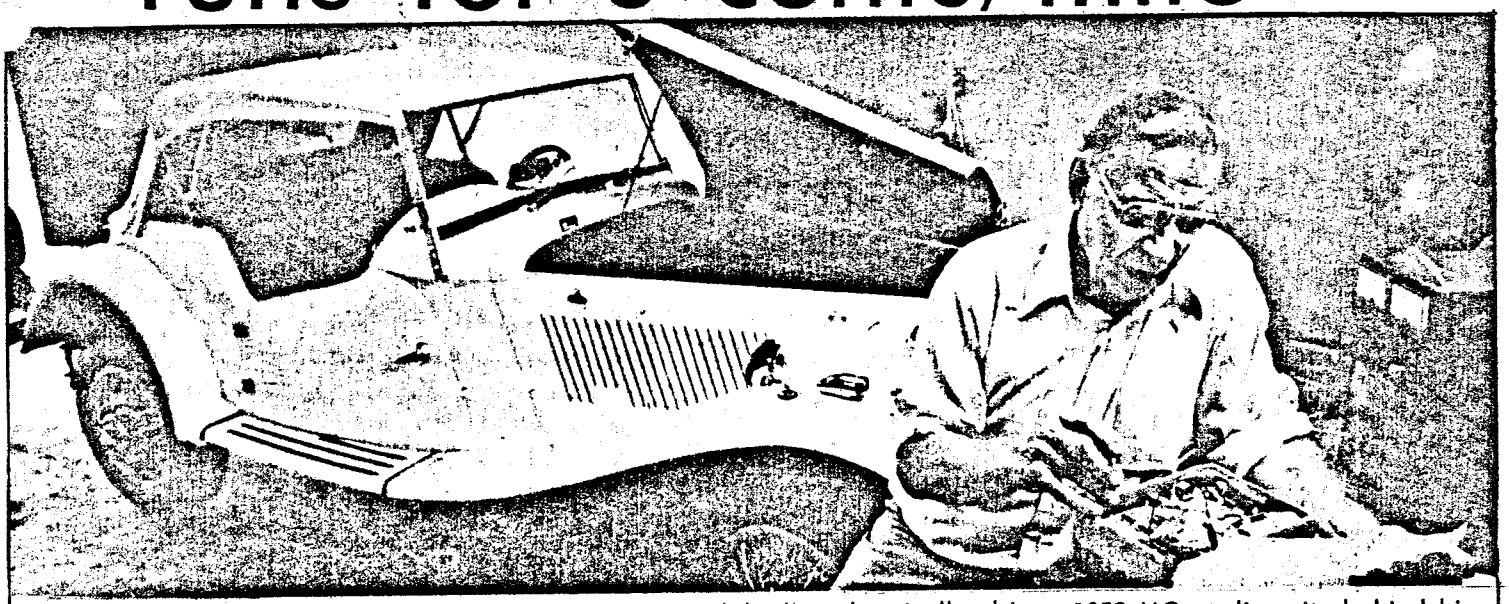
Stronger magnet allows smaller motors

Designers of small front-wheel-drive cars often have trouble squeezing the bulky starter motor under the hood. But starters appearing on some GM cars early this year will be just half the size and weight of their predecessors. That's because they will be using a superstrong permanent magnet called a Magnequench in place of the hefty coils or permanent magnets that line the casings of ordinary starter motors.

The magnet, developed by GM's Delco Remy division (Anderson, Ind.), is a compound of neodymium, iron, and boron. When this compound is rapidly cooled, or quenched, from the molten state, it forms a fine crystalline structure that leads to magnets 25% more powerful than samarium cobalt magnets, previously the strongest available.

The Delco starter motor, which contains six small magnets totaling about five ounces, is only the first application for Magnequench. The company hopes to sell the magnets for use in other electric motors, as well as tap the market for magnetic resonance scanners used in medical imaging.

Larsen's electric car runs for 5 cents/mile



Erv Larsen tinkers with an electrical component while his electrically driven 1952 MG replica sits behind him.

West Central Tribune, Minn.—Friday, September 6, 1985

By STEVE GRAVELLE
Staff Writer

WILLMAR — Like many men, Erv Larsen has a workshop in his garage. But while most workbenches may be cluttered with woodworking tools, Larsen's domain features transistors, resistors, an oscilloscope, and other test equipment. And while many hobbyists may display their work in the form of furniture or cabinets, Larsen tools around town in his major project.

"It's simple," Larsen says of his 1952 MG sportscar replica. "There's nothing to it."

At least, nothing like you'll find under the hood of your car. Larsen's MG is electric, powered by 16 batteries — stashed under the hood and in the trunk — driving a 20-horsepower motor that turns a Toyota automatic transmission connected to a Datsun rear end.

"I started out in 1974 and '75 with a (Volkswagen) Kharmann Ghia," Larsen says of his project. "The first move I made, I just took the engine out of the Ghia and put in a starter/generator from an airplane."

Larsen found that arrangement to be less than perfect, the motor running hot and getting only 20 miles or so to a charge. He tried a forklift motor that "was cool as a cucumber, but it didn't have enough top speed or horsepower — it just limped along."

The third try was the charm for Larsen. He noticed a trade journal advertisement for used 20-horsepower electric motors and purchased one. The motor worked fine, but the controller he used resulted in hesitant acceleration, jerky starting, and unbalanced battery discharge. That might have ended the project for most people, but Larsen rolled up his sleeves again and designed a sold-state controller that's 98 percent efficient.

"I've eliminated much of the mechanics," Larsen says of his new controller, a simple-looking vaned box. "I've eliminated the noise (of clicking relays), and increased the efficiency." Having conquered the power and control problems, Larsen turned to the question of bodywork, purchasing a fiberglass sportscar kit.

"I thought, why not put a decent body on it?" he explained, but the job was a bit more complex than that.

"I had to rebuild the whole frame," Larsen recalled. "You're supposed to put it on a VW pan. Before I bought it, I went to Fargo and measured one and took pictures."

For all that work, Larsen now can boast of a noiseless, clean vehicle with classic styling that costs a bit over five cents a mile to operate, including battery replacement and recharging costs. Larsen figures to get about 25,000 miles from a set of batteries, or about 400 overnight recharges. The current set is four years old "and still in terrific shape," he says. The project isn't quite done yet, as a look in the cockpit reveals.

"You can see the dash is pretty bare," Larsen says of the bare wooden panel. "I'm going to put in an LCD (liquid crystal display) unit with a little keyboard." When that's done, Larsen will be able to call up information on his speed, distance traveled, motor speed, and remaining range.

Continued

This car is penny cheap

Continued from Page 7

"I thought as long as it's electric, it may as well be electric all the way," he said.

Larsen is enthusiastic about the electric MG's potential, but a major stumbling block remains. The heavy, bulky storage batteries could be done away with, he says.

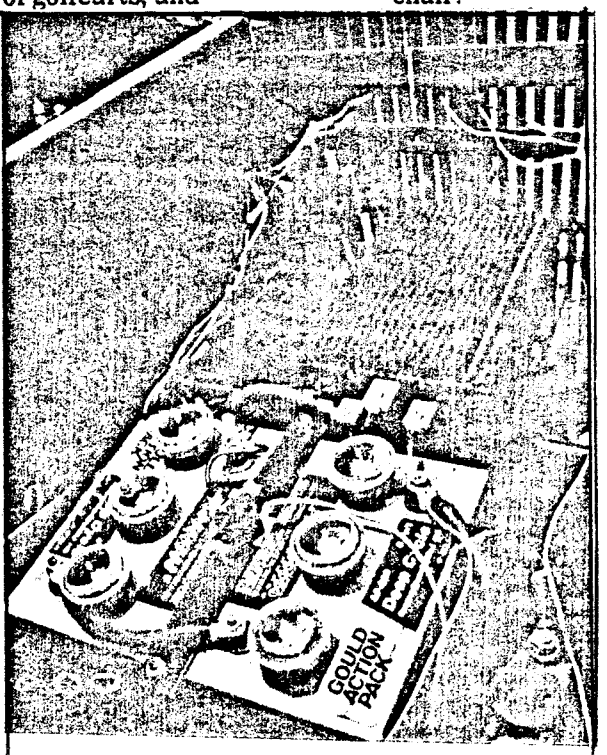
"I'd say in 10 years some smart guy is going to figure out an energy cell that would be applicable to this car," he predicted. "If you started from scratch, you could build this car for about $3,500 and do all right on it." Don't expect that breakthrough to come from Detroit, he added.

"Why do you think a guy that's building something like this for $14,000 is going to build something that's trouble-free?" he asked, indicating his full-sized sedan that shares garage space with the MG.

A lifelong Willmar resident except for his World War II service, Larsen operated a radio and television business before specializing in two-way radio systems. He was a member of the team that designed the statewide radio net that's used by police, fire, and civil defense personnel. Now that he's "retired," he's doing design work for American Continental, a local builder of golfcarts, and helping out at his church and a few other other civic groups.

"When you get to be my age," he observed, "You just don't want to buy a rocking chair."

Larsen's electric car



The "engine compartment" of Larsen's car.

Following the sun

An unidentified Mercedes-Benz driver poses with this Silver Arrow "solarmobile" — crafted in the company's Stuttgart, West Germany, training workshops — after winning the Swiss Tour de Sol. It was the Swiss Solar Energy Society's first European rally for vehicles powered predominantly by solar energy. Sixty-eight solar vehicles registered for five one-day legs of the race, which started at Lake Constance and ended at Lake Geneva. The Silver Arrow's 432 solar cells generated a top speed of just under 45 mph, which doesn't sound very important until you remember that it uses zero gallons of gas per mile.