FOX VALLEY ELECTRIC AUTO ASSOCIATION NEWSLETTER FOR APRIL, 2000

NEXT MEETING: Friday, April 21 at 7:30 PM in the Triton INDUSTRIAL CAREER BUILDING, (East Campus), Room 139

DISCUSSION TOPICS: 1. The May 6th Workshop details. 2. Recommendations from the Web ad-hoc Task Force on establishing a web presence. 3. National EAA membership report. 4. Member's projects.

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 members to receive our monthly Newsletter that contains useful information about electric car conversions, construction, news, policies, and events. Membership is not required to attend our meetings. Dues for NEW members joining in May will be $ 12.

To obtain information about the FVEAA you may contact either Past-President Ken Woods or President Shafer

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APRIL, 2000 PRESSEZ

Five members have agreed to exhibit their cars at the May 6th event. The host, International Brotherhood of Electrical Workers (IBEW), has agreed to provide 5-amp, 120-volt outlets for those who need (or wish) to get an opportunity charge at the facility while the cars are on exhibit. If you can bring your EV to add to the display let me know and come on in. Help will be needed to set up and man the displays. Please arrive by 9:00 AM if you can help. We will be passing out programs and the FVEAA Handout.

I have no idea of how many persons will attend. The Chicago interest in EV's has not been tested for five years. Ken is mounting an extraordinary effort to publicize the event. We also hope to get TV coverage prior to the event. Current interest in high gasoline prices could increase attendance. We could end up with a lot of people, particularly if it is a nice spring day. If required, we can present the program twice, once at 11:30 AM and again at 2:30.

We have received exceptional cooperation from Kevin Lynch of the IBEW.

You have noted the format change in the monthly Newsletter. Self-sealing envelopes will be used for future issues. This decreases my effort to fold, seal, and mail each issue. I look forward to future developments when the Newsletter can be e-mailed to those members who elect this form of delivery.

BILL

MINUTES OF MARCH 17, 2000 MEETING

The meeting at Triton College was called to order by President Shafer at 7:35 PM. Eighteen members and two guests attended. New members George Gladic, Ron DeBoth and Atlee Anderson joined the FVEAA.

The March meeting minutes were approved as published. Treasurer Corel reported $ 2533.38 in the checking account and $ 2481.06 in the savings account. This report was accepted.

President Shafer stated that Fred Kitch asked him to bring his car to the Riverside July 4th parade to accompany Fred's Ranger. The Net Gain group may join them with their dragster, go-cart, and radio-controlled Optima Battery case constructed by Member Zak. Others are welcome to join in. It has been a long time since we had cars in a parade. We have never before appeared in Riverside.

Three FVEAA members received ceremonial checks for their 1999 conversions at the March 16th recognition breakfast held at Brookfield Zoo. The EPA rebate amounts to 80% of conversion costs, up to a maximum of $ 4000. The program is funded by an increase in fleet truck license fees in the Chicago 6-county air quality region. Member's Kitch, Krajanovich, and Hendrickson were also recognized at the FVEAA meeting. Ken Woods took pictures of the three with the king-sized checks that will be in a future issue of the Newsletter.

Member Ken Woods gave an update on the FVEAA-ISEA May 6th Event. He has sent press notices to many organizations. Shafer will send notices to the auto clubs listed in the November, 1999 Tribune. Final details of the event will be included in the April Newsletter.

Members project status and problems were discussed. George K's Curtis controller failed yesterday. He plans to substitute the Wiley unit from his old car for a test. Member Rod Bohlmann also offered, if necessary, to loan his Curtis unit to be used for upgrading his Escort, "Sparky". Presently Sparky has been disassembled to repair body leaks before the electrical system is upgraded. Member Emde states he has on order a Warfield motor and has acquired thirty Optima batteries for his Ford Ranger conversion.

Bruce Parmeter of the National EAA has recommended the FVEAA become an affiliated Chapter of the National EAA. They have headquarters in the Bay Area of California. He indicated that a minimum of 5 FVEAA members, willing to also be members of the National EAA, would qualify the FVEAA as a Chapter of EAA. This would probably bring additional exposure to the FVEAA and could increase membership. This would, however, likely increase the administrative time required of the FVEAA Editor to reply.

The members present though it would be desirable to become an EAA Affiliate and continue to publish our monthly Newsletter. Two members now have individual memberships. Five others are willing to join. Application forms will be available at the April meeting. President Shafer will verify that with a minimum of five FVEAA also holding individual EAA memberships, we could become an affiliate.

There was an extended discussion about the FVEAA establishing a web site and sending e-mail copies of the monthly Newsletter to those persons willing to accept this version. President Shafer noted the present mailing includes 65 copies to paid members and 12 exchange and complimentary copies. He stated he could use the present system for no more than 100 copies per month. Above 100 the folding, sealing, and mailing would require additional effort than he could manage.

About a third of the membership has provided e-mail addresses. Among the members attending, about a third indicated they would accept an e-mail version. Also, about a third of the total membership have addresses outside the near-Chicago area and do not usually attend our monthly meetings.

President Shafer appointed Rod Bohlman, Jamie Viehweg, and Dave Stensland to a special Web investigating group and asked them to present their recommendations to us in April.

Member Vaughn Barker, who lives in Hammond, Indiana announced he is planning to sell two 1920's Model "T:" cars and a Dodge of the same vintage to someone interested in a restoration project.

Submitted by Secretary Dick Ness

RECENT ARTICLES AFFECTING ELECTRIC VEHICLES

Perceptive readers will note a subtle change in the title of this regular feature. The word *affecting* has been substituted for the former word **about.** This reflects an expansion of the subject matter to include information about fuel supplies and (to some extent) hybrid vehicles. Both of these subjects affect EV's. Take hybrids for example. Hybrids, with their high mileage by power averaging, will reduce petroleum demand, and that is a desirable objective. They are, however, still gasoline fueled and not electric vehicles.

Electrics "greener", guzzlers "meaner" in study. Chicago Tribune 2/24/00. The American Council on Energy Efficiency ranks EV's, such as GM's EV-1 and Nissan's Altra highest in their latest annual study of energy efficiency and minimal environmental damage. The Organization's objective is to encourage purchase of the GREEN cars on its list. Additional information may be found on their web site www.greencars.com.

Ford, Honda fueling up for alternative power. Chicago Sun-Times 2/10/00. These two companies will have hybrid vehicles on the road by 2003. Ford's Prodigy that weighs 2387 pounds, will use a small diesel engine to get 78 mpg, has a starter-alternator rated at 35 kW, a 300-volt battery system, and has a coefficient of drag of 0.199. Their P-2000 will use a small IC engine and incorporates a 3-phase AC drive system. Toyota will be selling its $ 22,000 Prius hybrid this year. Honda is now on the market with its $ 18,880 Insight. Honda's FCX concept will use a methanol fuel cell system. GM's Precept concept plans a rear-mounted engine.

The Columbus Dispatch, 1/13/00 had a photo of Fargo ND Global Electric's production line for their GEM. It showed 11 cars in various stages of assembly with six men and one woman working on the cars. GEM is being folded into California-based Zapworld. The paper also had an article about the Honda hybrid efforts. A quote by Toyota's Chairman, Fujio Cho stated, "We can no longer afford to ignore the signs of global warming and the fact that the consumption of gasoline and other fossil fuels is on the rise----Environmentally friendly cars will soon cease to become an option."

There were other articles about other hybrids that appeared in Chicago newspapers. They included the Dodge ESX –3, GM's Opel Zafira with a fuel-cell system, and other types being developed.

Sun-powered car hits 30 mph. Machine Design 3/9/00. Students at the University of Oklahoma have built a solar-powered car that generates 5kw from on-board solar cells. The vehicle weighs only **500 pounds.** The vehicle placed first in the Engine Innovation category at last year's Solar Challenge competition. The battery management systems converts dc to ac for propulsion purposes.

Driving cars with hydrogen peroxide. Design News 3/6/00, Page 32. Purdue University researchers are developing a fuel cell that runs on H O . It utilizes the chemical reaction between H O and aluminum. It generates about 20 times more energy per pound that does the lead-acid battery. As the aluminum oxidizes in the electrolyte solution it gives up electrons. Waste products are water and recyclable chemical compounds. Ramp-up time for the combination is about 2 hours.

Automotive Alliance. Chicago Tribune 2/12/00. U.S. and foreign automakers have an organization that is the successor to the AAMA. The alliance includes both domestic and foreign manufacturers. Shortly after the formation of the Organization last year it issued a press release stating that the auto industry has been constantly producing cleaner vehicles for 30 years. They believe the petroleum industry should share costs of producing lower-sulfur, cleaner-burning fuels. The no-sulfur Tier 2 EPA rule will enable use of less-costly catalytic converters but will increase fuel price, perhaps by 2 cents per gallon.

RECENT ARTICLES AFFECTING ELECTRIC VEHICLES - Concluded

In Transportation, one word: Plastics. Business Week 3/4/00, Page 10B. This is an intriguing story about a new product. The usual welded steel-framed auto body has been relegated to the scrap heap. Almost everything above the axles now is plastic-and fiberglass to reduce weight. Brunswick Technologies Inc. (BTI) is now producing a different reinforcing system for fiberglass mats. Instead of a woven fabric with glass strand looping over and under each other, BTI stitches the fibers together where they cross. The strands no long cross at right angles, allowing the product to concentrate strength in specific directions. Their "tri-axial" fabric has 80% of the fibers running lengthwise and the rest criss-crossing the main fibers at two different angles. This configuration is used on 157-foot long blades for a huge wind turbine produced by Zond Energy Systems in Tehachapi, CA. Other configurations, called "white steel" are used for bus bodies produced by North

American Bus Industries. Their bus bodies are 6-7 thousand pounds lighter than steel. Another version is being used by Hardcore Composites and used for Ohio bridge repairs.

Race to replace gas takes off. Chicago Sun-Times 3/27/00, Page 6. Scientific and political realities, and our addiction to cheap gas have heightened interest in alternative fuels for internal combustion powered automobiles. The chart below compares these fuels:

Unnatural Demand for Natural Gas. Business Week 4/3/00, Page 48. Natural gas prices are going up, but not yet by as much as petroleum has increased. In 1999, a thousand cu ft of gas cost $ 6.79, the latest price is $ 7.30. This isn't a surprise since industrial users, who account for half of gas use, increase the shift between oil and gas fuels. Also, natural gas supplies are at their lowest levels in four years. Inventories stand at 1.1 trillion cu ft, down 22.8% from a year ago. Estimated demand this year is expected to be up 5% while production will increase by 1%. Some of the increase comes from clean air regulators who are requiring coal-fired plants to meet requirements. Another source is the number of gas-fired generating plants that have low capital costs and can be constructed in about one year.

(Editor's note) Maybe Jimmy Carter had it right when, in the late 70's laws were enacted that saved natural gas for residential purposes. These were later repealed. The gas price increase may be bad news for use of natural gas in vehicles.)

Q&A to Jim Mateja, automobile writer for the Chicago Tribune. The reader has a small, foldable electric scooter (Zappy) and asks if it can be used on city streets. His local police couldn't give him an answer. Jim's reply: Yes, you can use them on the streets – if you want to compete with city busses and other traffic. He advises contacting Karen Kinsel, Special Vehicle Plates Division at the Secretary of State's office in Springfield

FUELING FACTS

I was curious about the rate at which energy was being added to my IC engine car gas tank while filling up at a gas pump. I started my stopwatch at the same time the hose nozzle was turned on. Fueling required 142 seconds to deliver 10.186 gallons of gasoline. From this I derive:

Heat content of fuel added = (120,000Btu/gallon)(10.186 gallons) = 1,222,320 Btu

Equivalent electric energy = (1,222,320Btu)(1 kWh/3413Btu) = 358 kWh = 36 kWh per gallon

Power Level = (358 kWh)(3600 sec/1 hour)(1/142 seconds) = 9076 kW = 0.9 Megawatts (mW)

This power level is usually found only in utility electrical substations and industrial locations. The **electrical** equivalent would be 908 kW assuming a 10% engine conversion efficiency in turning gasoline into mechanical motion. No battery charging system comes close to this level. The peak power for Level 2 charging = 19.2 kW @ 240 volts, 80 amps. Other charging systems requiring three-phase circuits can reach 60-90 kW.

Rapid-charging schemes will never make it economically. When the utilities wake up to the investment required for a high-power charging station but realize few kWh will be sold they probably will raise up-front installation charges to a prohibitive level. Utilities have subsidized the fast charging stations that have been installed. I believe the electric car

should be able to get opportunity charging from any 15-amp, 120-volt circuit. EV organizations and infrastructure conferences should address the cost subject.

Bill Shafer
4/2/2000

FROM OTHER EV NEWSLETTERS

The Electric Grand Prix Group in Hoyone Falls, NY in their March Newsletter has a follow-up article about the *Powerball* concept for generating hydrogen. They note that one gallon of hydrogen compressed to 3000 psi will expand to 204 gallons of gas at ambient pressure. One gallon of liquid hydrogen yields 778 gallons of gas at ambient pressure, but this requires cryogenic storage. Reforming one gallon of methanol will yield 800 gallons of hydrogen at ambient pressure. One gallon of Powerballs will yield 1307 gallons of hydrogen at ambient pressure.

They also note that currently we are importing 50% of our petroleum. This is expected to increase to 70% ten years from now.

EV Circuit, from the Ottawa CA Group in their Jan/Feb Newsletter summarized the Canadian Motor Vehicle Standards for Low-Speed Vehicles, Power-Assisted Bicycles, and Light-Duty Vehicles. The Electric Vehicle Association of Canada was instrumental in preparing this. Ford of Canada is exploring a demonstration program for the TH!NK that is powered by a liquid-cooled 3-phase electric motor and has 19 NiCad batteries with a storage capacity of 11.5 kWh. They state the Postal Service has awarded a $ 24-million contract to Baker Electromotive for 500 electric-powered postal vehicles. The company is based at the former Griffiss Air Force Base.

VEVA, the Vancouver Organization in their March Newsletter had a 3-page article written by Member Craig Spence printed in the Vancouver newspaper about an electrified Porsche and VEVA. According to VEVA Editor Rob Cameron it stimulated a lot of response and community interest in VEVA.