

FVEAA NEWSLETTER
January 1984

MEETING NOTICE

The next regular meeting of the FOX VALLEY ELECTRIC AUTOMOBILE ASSOCIATION will be on Friday, January 20, 1984 at 7:30 p.m. at the Mid-America Federal Savings Building located at 250 E. Roosevelt Rd. (corner of Roosevelt Rd. and Naperville Rd.) in Wheaton, Ill. We expect our President, Joe Pollard to continue as leader in the discussion of Pertinent Formulas and Their Uses.

FROM THE PRESIDENT'S DESK

C'm out, Fellows! We need you. Very exciting dicussions going on. Lot'a plans for the future. Volunteer and become part of it. Need help on hybrid/electric motor/3-wheeler. How about steam, huh? Maybe we need a MWAF club. Ask what it is.

FROM THE LAST MEETING'S MINUTES

George Krajnovich, who was guest and became a member, reported that he has built a Commuter Town-Car, making the body of fiber-glass and foam plastic. He has a 5 HP engine driving a 35A generator at 72V. The car is built on a VW chassis.

John Emde commented that a 3-wheel vehicle is classed as a motorcycle and insurance rates are very high, but you do not have to conform to pollution standards, nor are seat belts required. Plastic windshields can be used. The headlight must be on in daytime driving.

John Newton reported that the design for the motor his group is working on is completed and the drawings are about 3/4 done. When completed they will be sent out for construction quotes.

The hybrid vehicle needs a 16 to 25 HP gas engine to drive 200A • 48 V generator.

Using Newton's motor, a 100A at over 100V generator would be needed, driven by the gasoline engine.



fox valley electric auto association inc.

624 Pershing St. Wheaton, Il.
60187

BATTERY CHARGERS FOR E.V.

The books generally say, "There are two types of battery chargers - Constant Voltage and Constant Current".

Make that word "Constant" read "D.C." and you see they are referring to D.C. generators, or present-day automotive-type alternators which have a 3-phase full-wave bridge rectifier to give a low ripple D.C. output. These systems are easily controlled by varying the field current.

These generators must be driven with a 3 to 5 HP motor, either electric, fuel or wind. Generally these are not practical or low-cost in this area. Therefore, we will use the 60 cycle lines coming into our homes. This article will cover the use and basic design of a transformer-type of battery charger.

TRANSFORMER BATTERY CHARGER FOR E.V.

In a 60 Hz single phase supply, full-wave rectifiers are used to give a pulse of current 120 times per second.

The magnitude of this pulse is determined by the difference between the instantaneous value of the open circuit voltage and the battery voltage divided by the equivalent impedance of the secondary. (See Figure 1)

For a 30-amp supply, the peak current is approximately 100 amps and the rms value is about 50 amps.

For a 48 v. battery, 50 v @ 50 amps - 2500 VA.
On a 120 V. line, $2500/120 = 21$ Amps. Either adjust slightly below 30 Amps or connect on 230 V. line.

For a 96 V battery, operate at 15 to 25 amperes (limited by temperature rise of the transformer) or double the thickness of the core. Run from 240 V. line, on the 120 V. primary.

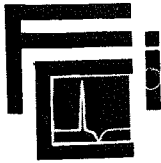
At 100 to 150 Watts per lb. a core can be found or stacked to weigh between 16 and 25 lbs. Center leg about 7 sq. in. Try for 2.25 @ 3 in. thick. I found cores from the high voltage supply in a 1200 watt microwave oven. This is a cemented stack of grain-oriented steel 2.25 x 2.25 in. - 5 sq. in. At 14400 gauss we need 100 turns on the primary. Two primaries in parallel on 120 V. connect in series for 240 V.

Likewise, two secondaries will allow two battery combos to be charged. Taps can be added for values between. Connect per instruction.

No 10 sq. or rnd. #9 Thermalex Essex GP-200. You will need about 250 ft. or about 8 lbs. for the 2500 VA. Twice as much if building the high speed 96V. or 106 V. charger.

For now, that's it. Next month we will go thru the construction of the manual battery charger. Also maybe a trick or two.

Joseph W. Pollard
1/8/84



FIRING CIRCUITS, INC.

DIVISION OF MARATHON ELECTRIC MFG. CORP.

RECTIFIED SINE WAVE PAPER

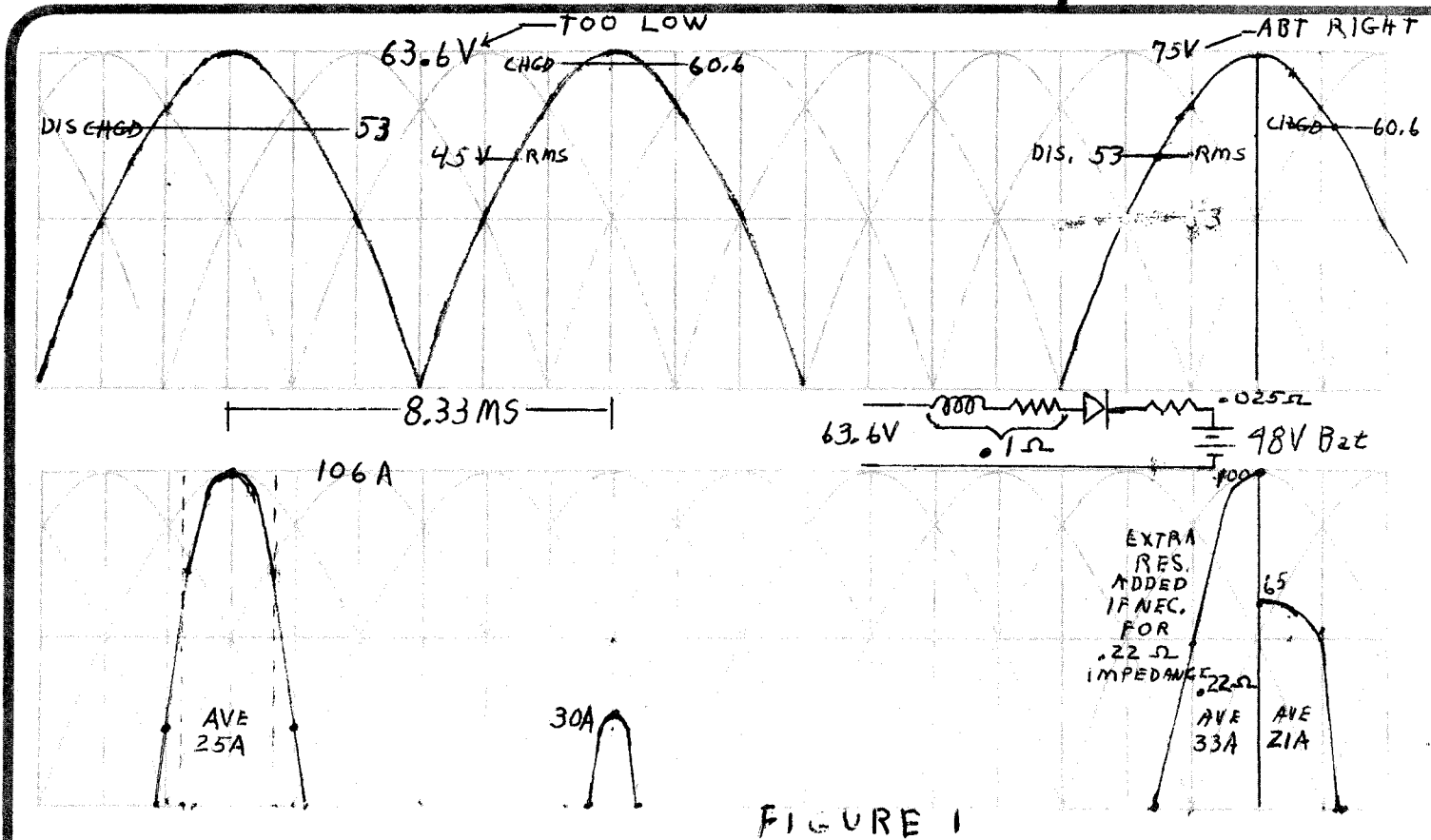


FIGURE 1

FOR SALE by club member, Marion F. Bramel - Electrified Fiat 1974 four-door G E motor, 72 volt system, 12-6 volt batteries, SRC Control. Asking \$1500 Adress - 502 McHugh Rd., Yorkville, IL 60560 Phone 312-553-5344

FOR SALE by Roger Sutfin - 1966 Renault Dauphine 4 Dr. sedan. No motor, rear trans axle - Car in good condition \$400. (1800 lbs. with elec. motor & batteries) Call 858-4788 or 858-2189 and leave message.

Roger also would like to obtain a narrow 3-wheel electric scooter. Something that could be fixed up would be all right.

LETTER TO THE EDITOR from Leonard T. Fisher, who has moved to 6351 Amston Dr., Dublin, Ohio 43017.

Dear Horace,

Thanks to you and your partners, I very much enjoy receiving the FVEAA Newsletter each month.

All is well here. The kids are doing well in school and I'm afraid I have even too much job security here. Farmers Insurance is growing by leaps and bounds here in Ohio.

The Subaru is still doing very well on the original set of batteries - over $3\frac{1}{2}$ years old. The Exide Ev-4's have taken their share of abuse too. I only check them about 3 times a year, and this spring and summer I was stuck in Detroit quite a bit due to a serious hail storm . . . so I forgot to check them. At the end of August I added $3\frac{1}{4}$ gallons of water and figured the batteries were a lost cause. However, as the following chart shows, the batteries may be making a come-back:

Month	#Miles Driven	Miles/KWH	Cost per Mi.	
Jan.	54	33	1.64	4.18¢
Feb.	54	33	1.64	4.41¢
March	86	51	1.69	4.48¢
April	75	49	1.53	4.75¢
May	70	44	1.59	4.14¢
June	52	44	1.18	6.55¢
July	50	66	.76	9.98¢
Aug.	56	68	.82	9.23¢
added $3\frac{1}{2}$ gal H ₂ O to batteries				
Sept.	72	81	.89	8.55¢
Oct.	68	62	1.10	7.15¢

I have my fingers crossed!

I have even a bigger problem now, however. My wife, Ann, has decided that the Subaru doesn't go far enough for her, and she wants a car with an internal combustion engine. (The Fiero looks particularly good to her). If that happens, I'll have to figure out what to do with the Subaru.

John Stockburger and I met in Detroit for the E.V. show a couple of months ago. We had a good time, but were very disappointed in the size of the show. Perhaps John has given a report about the show at a club meeting.

Keep up the good work. The Newsletter is just great. Since I'm so far removed, I would enjoy reading what each member is doing.

New Group To Promote EVs

Seventeen major U.S. electric utility organizations representing 29 operating companies have announced the formation of the Electric Vehicle Development Corporation. The new organization's purpose will be to help achieve quantity production of electric cars and trucks as early as possible. It will complement the R&D activities of others, such as the U.S. Department of Energy, the Electric Power Research Institute, and individual manufacturers by planning and organizing large scale joint vehicle purchases and demonstration projects.

The EVDC founders have launched a membership campaign to capture broad utility representation. At the same time, business and industrial organizations are being invited to join as associate members. The corporation will start its formal activities with the first Board of Directors meeting during November 1983. The opening of the corporate headquarters is scheduled to occur in the first quarter of 1984.

The present nucleus of the EVDC includes: American Electric Power Service Company, Arizona Public Service Company, Carolina Power and Light Company, Commonwealth Edison Company, Consolidated Edison, Detroit Edison, Florida Power Company, Gulf States Utilities Company, Long Island Lighting Company, Ohio Edison Company, Public Service of Indiana, Southern Company Services, Tennessee Valley Authority, The Cleveland Electric Illuminating Company, The Toledo Edison Company, Union Electric Company, and Wisconsin Electric Power Company.

The decision to form the EVDC was based on the following conclusions:

- Electric vehicles will constitute a desirable and significant new off-peak source of load and revenues for most utilities;
- Electric vehicles are an appropriate means of reducing the nation's fossil fuel dependency and providing options to the transportation consumer;
- Electric vehicle technology has made progress and is approaching cost-competitiveness for some commercial uses;
- Utility industry leadership is needed to influence the efforts of research organizations and manufacturers as well as to identify and initially develop the market; and
- Risk reduction is needed by both manufacturers and buyers in order for early commercialization to happen.

EVDC activities now underway include the completion of a national electric vehicle introduction strategy and business plan, specifications for an initial fleet electric vehicle, and a detailed market analysis. The founders hope to initiate electric vehicle introduction within the next five years.

"Since its beginning in Fall 1982 the founders have been working closely with the Electric Power Research Institute, which has an active R&D program in electric transportation. Floyd Culler, president of EPRI, endorsed the founders' efforts in a letter to its chairman, John McLean of Wisconsin Electric Power Company. "Formation of a national group to focus and consolidate electric vehicle interest and action certainly seems necessary if the goal of commercializing electric vehicles is to be achieved in this country," said Culler. "We at EPRI are enthusiastic about the industry initiative represented by the EVDC, and we hope that it can become a broad industry effort."

"Speaking for the founders, McLean stressed the appropriateness of utility leadership. "There is a great need for an organization to bring together the

interests of the different stakeholders in electric vehicle commercialization," he said, "including utilities as well as vehicle and component suppliers, government, and the prospective users themselves. It is clearly in the interest of the electric utility industry to lead in building this very desirable utility load as quickly as possible. This will aid both the utility ratepayer and investor by making better use of our huge investment in generating capacity during off-peak hours."

Further emphasis was added by Thomas Zeterberg, the founding group's communications coordinator and representative from the Long Island Lighting Company. "The time for action is right now," said Zeterberg, "while the technology is on the threshold of feasibility for many uses and prospective manufacturers are looking for encouragement from the marketplace. With strong utility support we are convinced that the EVDC can provide that encouragement and the direction for advancing the introduction of electric vehicles. If we can do that, everyone from the manufacturers to the general public will benefit." □

UK To Test New Hybrid Buses And Vans

In England, the Greater Manchester Transport Executive (GMTE) plans to put a fleet of 11 hybrid diesel-electric buses on the road by next spring.

The 35-passenger buses, plus ten hybrid vans, are being built and tested as part of a \$600,000 project funded equally by the GMTE, the Commission of the European Communities, and a small British company, Hybrid Vehicles, which will coordinate the program.

The vehicles are a development of earlier work by Dragonfly Research which two years ago developed a hybrid diesel-electric bus based on a standard Seddon chassis. This bus has now completed about 600km of trials but has yet to be used to carry passengers. A passenger-carrying license is now being sought and commercial operations are expected to start before the end of the year.

Ten additional buses, each powered

by four 10kW disc motors coupled to a 30kW Hatz diesel engine, will be built using a purpose-built chassis designed and manufactured by Shelvoke and Drewry.

The vans, based on an Escort chassis, will use a single 10kW motor linked to a Briggs & Stratton 13kW engine. These will be placed in service with local authorities.

Hybrid Vehicles expects the hybrid buses to use about half as much fuel as conventional buses. Although the trial vehicles will cost more than comparable internal combustion engined buses, the company claims that the additional costs will be recouped within two years of commercial operation.

The performance of the hybrid buses and vans is to be monitored and evaluated by the Electric Vehicle Development Group with the support of one of its members, the University College of Swansea. □

Survey Finds Fleets Could Use More EVs

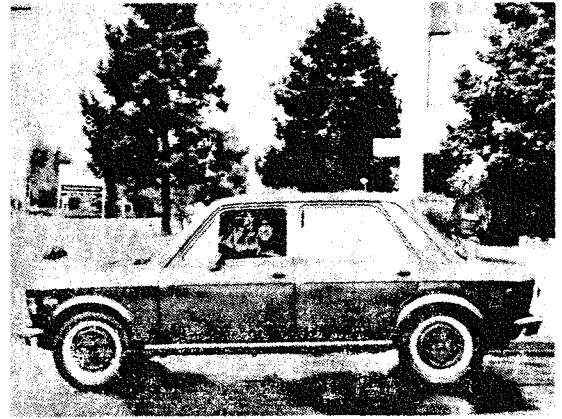
A recently completed survey for Detroit Edison and the Electric Power Research Institute, by the University of Michigan, investigated several factors which may help to identify fleets whose managers may be most willing to consider EVs. Prime candidates included fleets with pickups only, two or more low-mileage vehicles, payloads under 500 pounds, and non-union drivers.

The study also provided an encouraging view of the characteristics of commercial fleets in the Detroit area. Based on the sample used, the surveyors estimated that some 47,000 light-duty commercial vehicles within the Detroit Edison service area alone would be amenable to substitution by EVs with a 60-mile range.

Based on these results, a national EV commercial fleet market survey is now being planned. This survey will involve some 600 fleet managers, using interviews covering willingness to try EVs, vehicle configurations desired, number of substitutable vehicles, and required price and operating cost levels. The results of this national survey will be used in the development of a strategy for commercial fleet introduction. □

168 MILES ON ONE CHARGE!

The annual rallies of the USA's Electric Auto Association have produced many surprises over the past ten years — but the 1983 event gives EVers something that many consider the greatest accomplishment yet! A talented young EAA member ran his converted Fiat a distance of 168 miles on a single battery charge — a feat believed to be not even nearly matched by any EV of comparable size and weight. The winner, Saied Motaie, is pictured here with his most amazing EV. □



England Gets Ready For Production EVs

Vehicle fleet managers from private companies and public authorities were present recently at the Transport and Road Research Laboratory in Berkshire and invited to inspect and test drive the various models of the four main commercial electric vehicles now available in the UK.

Three of the four companies now offering electric versions of established vans and cab/chassis units are preparing for the first production manufacture of these vehicles. By late next Spring Britain's commercial electric vehicle population will have grown by 350, and while about one half of these

are earmarked to join the 130 or more EVs already in service with the electricity supply industry, the rest are expected to go to local authorities and other users like laundries, bakeries, the Post Office and British Telecom.

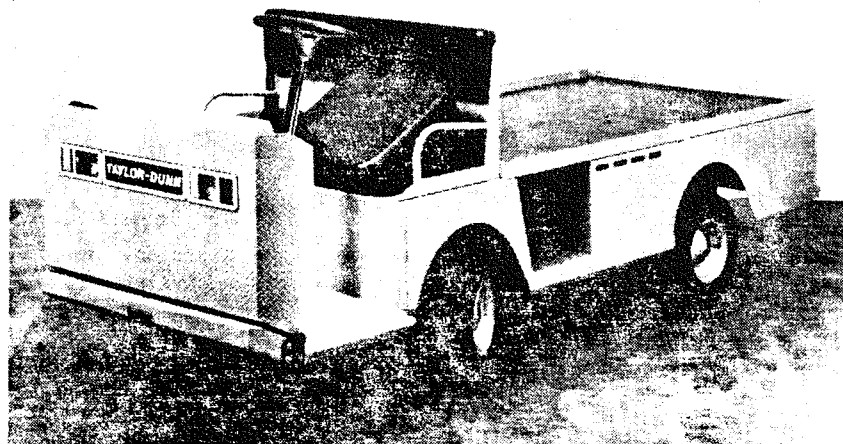
All four manufacturers use drive systems developed by Lucas Chloride. Each drive comprises batteries, motor, controller, charger and associated ancillaries; they are designed for assembly line fitting to standard production vehicles.

With a top speed of 80km/h and a working range of about 80-100km, these electric vehicles are obviously only able to address a limited sector of the commercial fleet market. □

Taylor-Dunn Wins Design Award

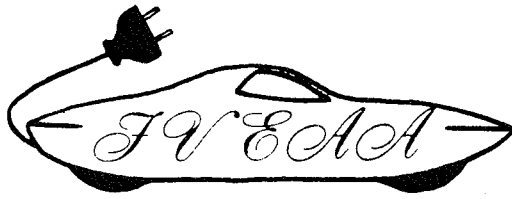
Taylor-Dunn Manufacturing Company, a leading manufacturer of electric personnel and burden carriers, was recently awarded a top design honor, the Governor's New Product Award, for their new Model B 2-10 electric truck. Selected by the California Society of Professional Engineers, the award recognizes outstanding new product design and engineering. As a state award recipient, Taylor-Dunn is a candidate in the national award competition which will take place in January.

Key to the truck's selection were several design, safety and efficiency features. The Model B 2-10 offers as standard equipment a deadman seat brake, which, when the driver alights, automatically brakes the



vehicle. Also, the truck has as standard equipment a solid state tran-

sistorized speed control, developed by Taylor-Dunn.



fox valley electric auto association inc.

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MEMBERSHIP

A membership in the Fox Valley Electric Auto Association (FVEAA) is open to everyone. Currently there is only one grade of membership regardless of the members degree of participation in association activities. Membership in the FVEAA is contingent upon payment of the annual membership fee. The membership fee can only be waived by special vote of the Board of Directors. Each member in the FVEAA receives a copy of the FVEAA Newsletter each month. They are also entitled to attend and vote at all association meetings.

All memberships in the FVEAA run from November 1 to October 31 of the following year. The dues are \$15.00 per year payable at the November meeting. New members joining after November shall pay \$1.25 for each month remaining before the following November.

The following form may be used to apply for membership or to re-new one.

Date _____

APPLICATION FOR MEMBERSHIP OR RENEWAL

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

- Just interested in Electric Vehicles
- I have an Electric Car
- I wish to build an Electric Car

Amount enclosed \$ _____ for _____ months.

Mail to: Mr. Jack T. Cahill, FVEAA Tres.
1 S 736 Vista Ave.
Lombard, Il. 60148

