

FVEAA NEWSLETTER

FEB 1984

MEETING NOTICE

The Fox Valley Electric Auto Association will meet on Friday, February 17, 1984 at 7:30 p.m. in the Mid-America Federal Savings Building, located at 250 E. Roosevelt Rd. in Wheaton, IL. Our president, Joe Pollard will be explaining the meanings behind the formulas that we frequently use. He hopes to see you all there.

FROM THE EDITOR

Please don't be bashful, as John Stockberger says. We are your friends, so write and tell us what you are doing or planning to do and what problems you are having. What news items have you come across? Are you looking for someone to help you in some way? Would you like to trade skills? Maybe you can do body work but don't understand motors or the other way around. Maybe you need a place to work. It helps to let these things be known. Let's make use of the newsletter.

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 \$4000⁰⁰ Address - 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.



Fox valley electric auto association inc.
624 Pershing St. Wheaton, Il.
60187



Fox valley electric auto association inc.

FO. 8675
~~MEMBERSHIP APPLICATION~~

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 _____

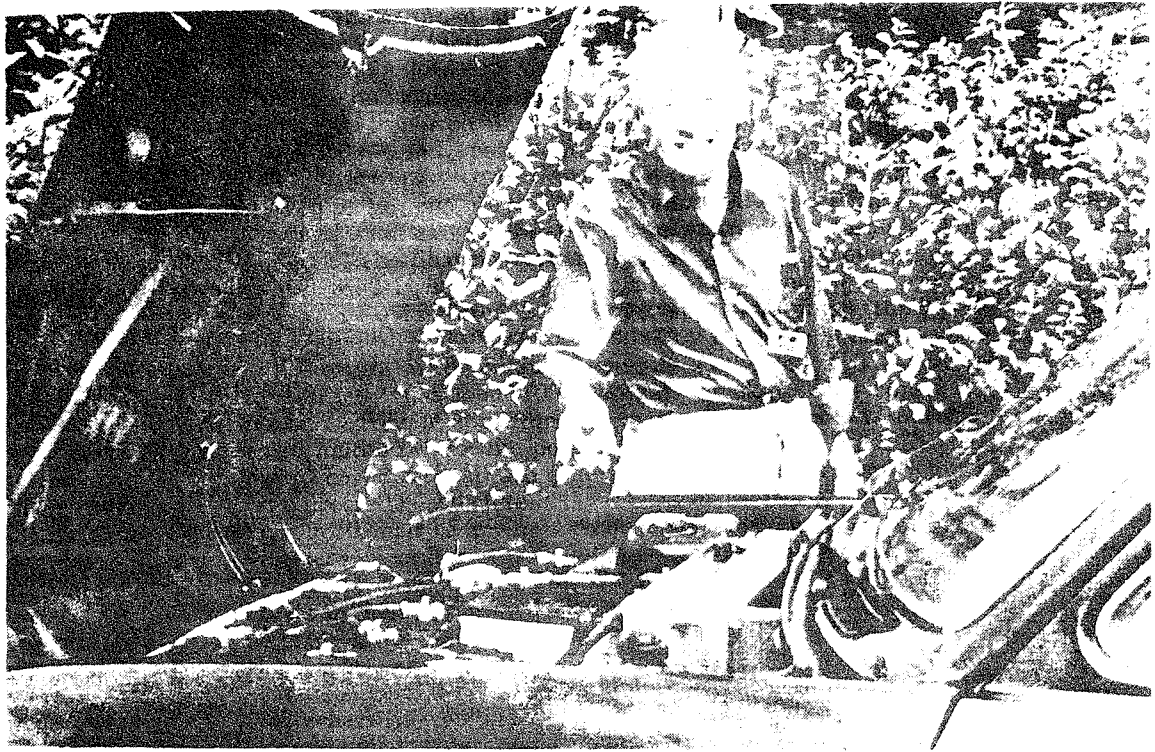
- Just interested in Electric Vehicles
- I have an Electric Car
- I wish to build an Electric Car

Amount enclosed \$ _____ for _____ months.

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

PEOPLE

September 24, 1980



Wave of the future?

Wheaton Senior John Ahearn shows off his newly converted electric car parked outside of the Memorial Park fieldhouse. Ahearn says he plugs the car in every night to recharge the batteries. This is usually about 9:30 p.m. He leaves it plugged in until it's time to leave the following day. He says he can go about 60 miles on one charge.

For those of you who are too far away to attend this meeting, John is still with the
company machine part of the club. He is still supplying the same car,
and has quite a few more miles on it. In fact he just told me he had
over 5500 miles and he is driving forward to many more.

Harnessing the Wind Gains as a Power Source

Space Age windmills are costly now, but experts say they'll be a valuable energy producer in the years ahead.

ALTAMONT PASS, Calif.

Heading out of California's parched Central Valley toward the Pacific Ocean, travelers encounter a strange sight as they enter Altamont Pass: A forest of long-bladed windmills resembling huge, one-legged storks with strange wings spinning furiously.

The windmills, concentrated in what are called "wind farms," represent a promising new source of electrical energy for California and the nation.

Here, about 50 miles east of San Francisco, some 1,500 wind turbines of various sizes are in operation. They are capable of producing 80,000 kilowatts of power, enough to provide electricity for 20,000 homes.

In all, some 35 firms have invested more than 800 million dollars to harness the wind in California, where more than 90 percent of the nation's wind turbines are located. The state expects to have 3,344 wind turbines producing 341 megawatts of power by the end of the year. A megawatt is a million watts, or 1,000 kilowatts. It takes 2 kilowatts to power an average household.

By the turn of the century, says Kathleen Gray, an analyst for the State Energy Commission, about 10 percent of California's electricity will be supplied by the wind.

Impact of '70s. Wind power is one of civilization's oldest forms of mechanical power, and more than 150,000 windmills still pump water on the nation's farms and ranches. Interest spurted in the 1970s during the surge in oil prices and approval of federal and state tax breaks. Environmentalists touted wind power as a renewable, pollution-free source of energy.

California was one of the first states to exploit the potential of wind energy by identifying sites capable of producing some 13 million kilowatts of electricity—roughly equal to the output of 13 nuclear power plants.

While wind probably will never replace the atom as an energy source, experts say it can help utilities in some areas meet peak-load demand without building costly new power plants.

At Altamont Pass, for example, there are days between March and October when winds driven by the temperature differential between ocean and valley seldom drop below 40 miles per hour.

Explains Nolan Daines, vice president of planning and research for Pacific Gas & Electric Company: "Our customers' need for electricity is at its peak in the summer, and that's when wind-farm production also will be greatest. It's a good fit."

PG&E believes wind could reduce its need for imported oil, with each 600 kilowatts of wind energy substituting for a barrel of oil.

Even so, getting "free energy" from the wind is not easy and often is uneconomical. "The financial statement of a typical wind farm makes you want to cry," says David Pierce, a Los Angeles tax attorney.

The cost of wind-generated electricity currently runs about 10 to 12 cents per kilowatt-hour, approximately twice what utilities pay for the power. Helping to cover the gap are federal and state tax credits, which return up to half of an investment in wind energy.

Federal law also requires utilities to buy renewable forms of energy from producers at the "avoided" cost—the price they otherwise would pay for additional generating capacity. "Without tax breaks, the industry is not competitive today," observes Geoffrey Commons, a California energy commissioner.

Technical problems also plague the infant industry. Designs and equipment are unproved. The optimal size for machines, which range in capacity from 25 to 2,500 kilowatts, has not yet been determined. Operating experience for most producers is measured in months, not years.

Cost cuts. Yet technical problems are being solved as producers gain more experience, and costs are coming down.

Says Alan Friedman of WindMaster, a wind farm at Altamont Pass: "This is a new industry. As we move down the learning curve, I foresee substantial decreases in costs."

Three years ago, companies were paying \$3,000 to

\$5,000 to install 1,000 kilowatts of power. Today, the cost is roughly half that. In the future, mass production and standardized designs are expected to cut outlays to the \$1,000 range—more in line with oil, coal and nuclear power.

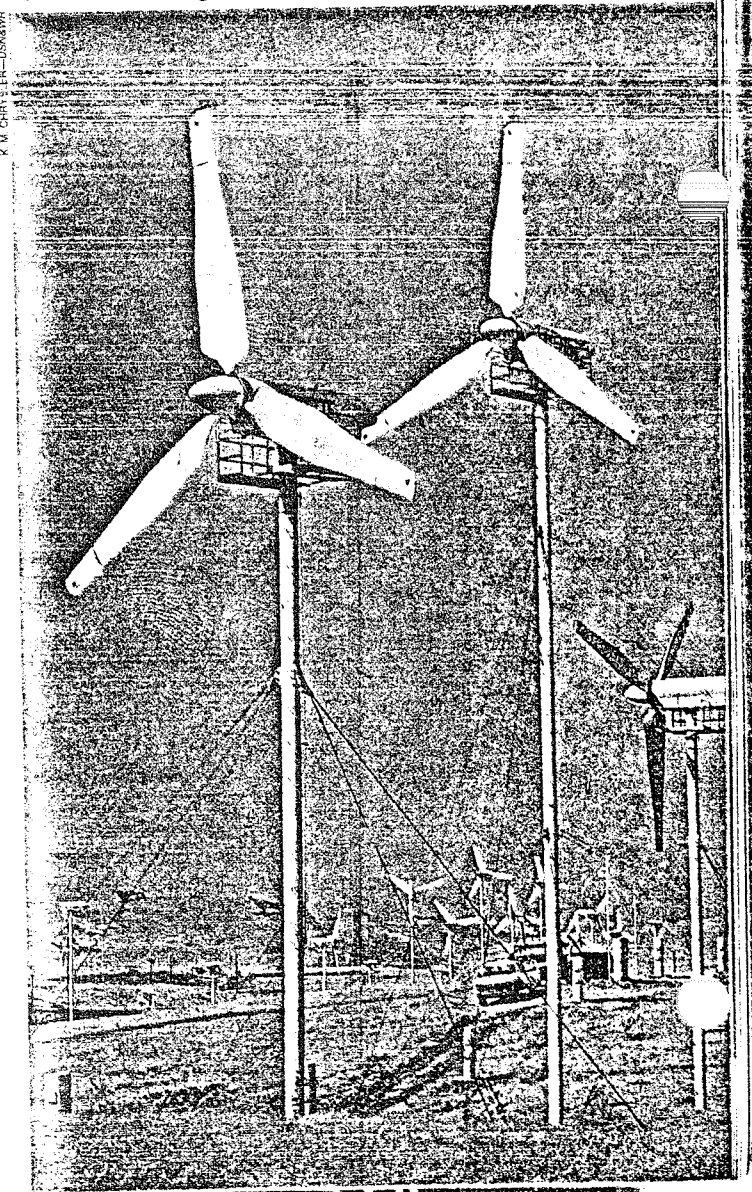
Wind-farm operators also are getting better prices for their power sales. The California Public Utilities Commission recently approved 10-year contracts for alternate energy calling for annual increases in prices to 8.5 cents a kilowatt-hour in 1987, probably rising later.

Predicts Michael Batham, manager of the state's wind-energy program: "Within five years, wind turbines up to 500-kilowatt capacity will be competitive in California without tax shelters."

While no one suggests that wind will ever completely replace conventional power plants, the winds that blow relentlessly through Altamont Pass and other parts of the country promise to make a vital contribution to the nation's energy resources. □

By K. M. CHRYSLER

"Wind farms" are growing more economical.



Electronic 'brain' directs electric motor

Fort Wayne, IN—A new electric motor design offers longer life, lower operating costs, reversibility and programmable torque and speed. These benefits are made possible by the motor's electronic control system. The motor itself is an electronically commuted dc motor, but its construction is similar to that of a standard ac motor except for the permanent magnet rotor.

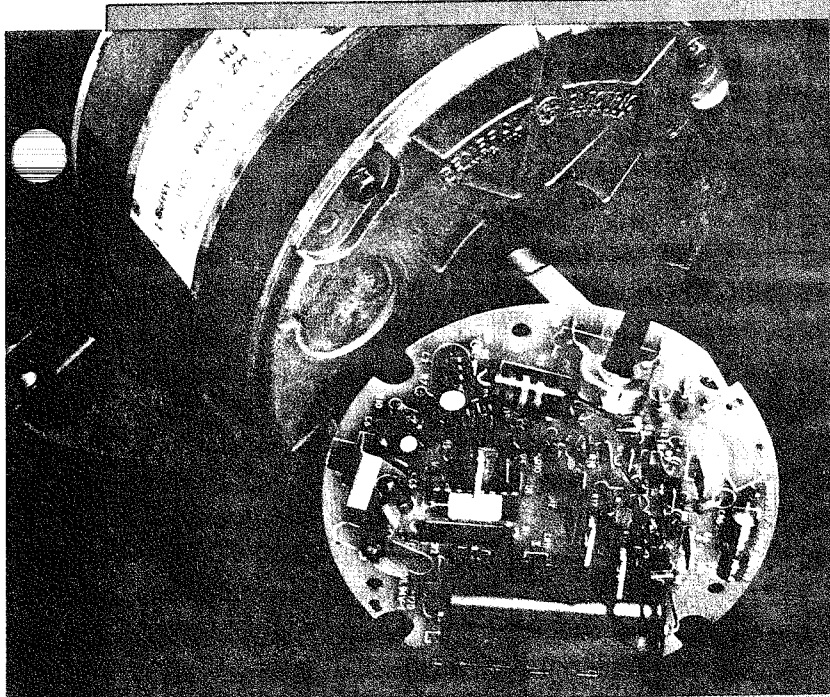
The expanded capabilities of the General Electric "Programmable" motor stem from two technical developments. The first is in the field of power electronics, specifically the Insulated Gate Transistor (IGT), a power semiconductor switch that provides high-current densities with low gate drive power. The other development is a patented electronic circuit that senses the back electromagnetic field (EMF) of the

motor and uses it to determine rotor speed and to generate a control signal for commutation. This arrangement permits precise control of the motor over a wide range of speeds and loads.

The electronically commuted motor has typical dc-motor characteristics with a linear speed-torque curve and the ability to operate at either fixed or variable speeds. Unlike the typical dc motor, it has no brushes, and so eliminates wear, dusting and sparking. The user of the motor avoids ac-motor disadvantages such as fixed-speed operation and efficiency drop due to rotor losses. While the "Programmable" motor represents new applications of motor control technology, its cost is kept under control because it is manufactured with existing low-cost, high-production manufacturing methods.

Electric motors that use the new drive system are expected to expand into an entire line of motors in the 1/20- to five-hp sizes. William Fenoglio, VP and general manager of the GE Component Motor Div., says that within ten years the motor industry could be selling more than 15 million electronically controlled motors worth \$700 million.

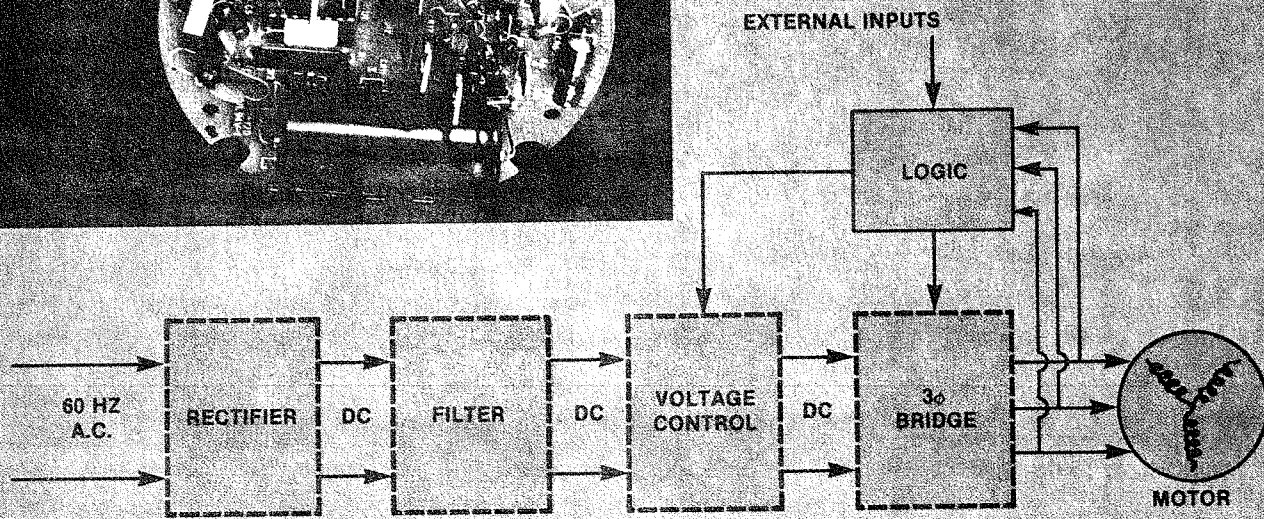
Today, the "Programmable" motor is produced by GE in the NEMA 48 frame dia rated at 1/20 hp. GE expects to expand production into 1/2-hp sizes in the near future. This new design, in addition to its virtues of variable speed and reversibility, also provides quiet operation, higher than synchronous speed, dynamic braking and high efficiency over a wide speed range. These extra benefits are expected to offset the cost of the additional electronics. □

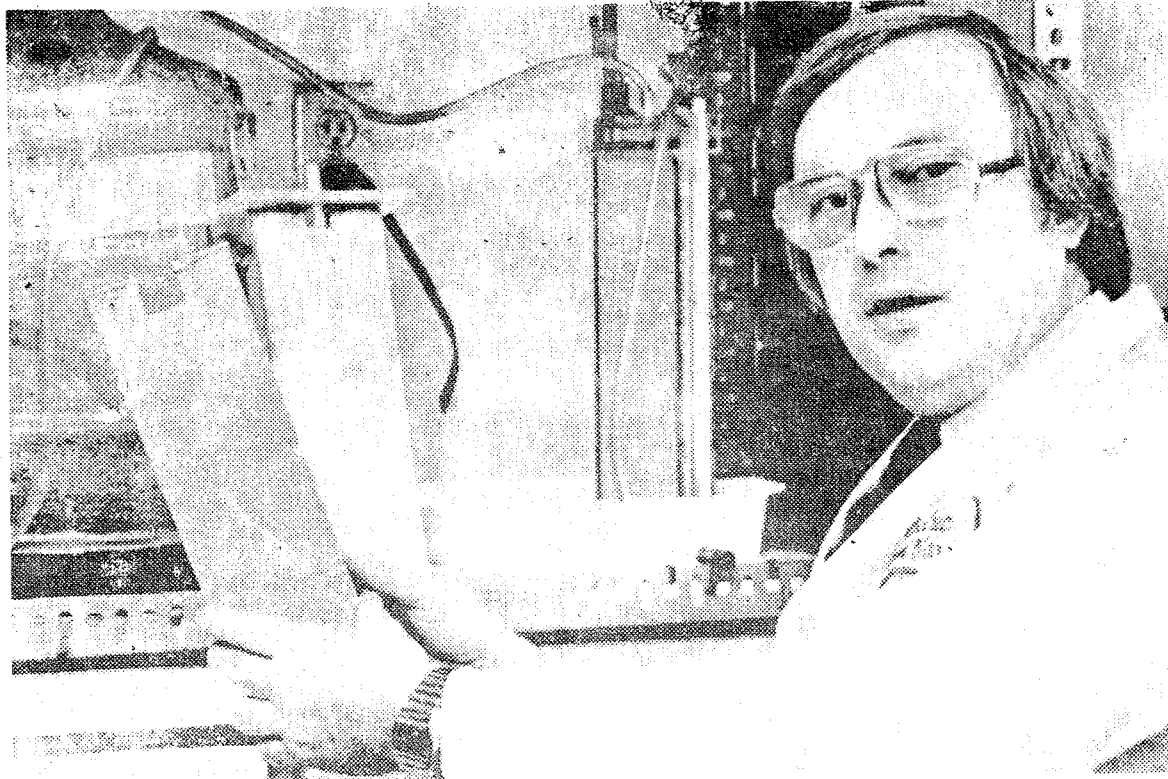


Electronically commuted fan motor made by General Electric uses new solid-state circuitry to expand its range of desirable motor characteristics.

'Programmable' motor operates as dc motor using electronic circuitry to convert incoming ac power to dc and also to provide control signals for infinitely variable speed or reverse operation. New motor design provides compatibility with microprocessor-based controls for 'smart' motor performance.

ECM SYSTEM



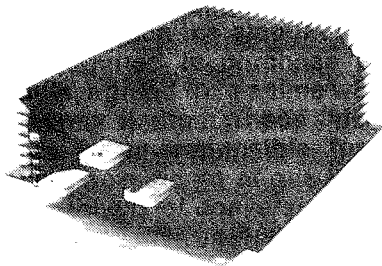


Magnesium electricity

George Thiess of Richardson, Texas, says he is close to testing an electric car that will operate on magnesium made from processed seawater. He displays a magnesium rod that he says will charge a regular battery using a patented chemical solution called electrolyne. (UPI)

New Products

New EV Controller

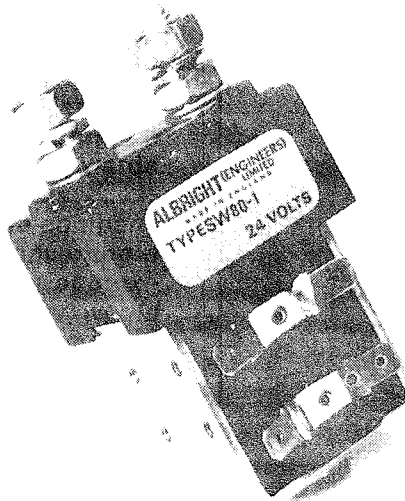


The DCC120 represents the latest development in transistor controllers, according to its maker. Some of the most notable features of the new controller are as follows: nominal input voltage from 24 to 120 volts; continuous output current 400 amperes; no auxiliary battery or propulsion battery tap required. The unit is completely enclosed inside a weatherproof heat-sink; cooling fan is unnecessary in many applications.

If unit overheats output current and dissipation are automatically reduced. It weighs 14 lbs. and is 9" x 10½" x 3½".

For further information: PMC Energy Systems, Inc., 1224 Tenth St., Berkeley, CA 94710.

New DC Contactors



Albright SW80 series of DC contactors have been designed for small electric vehicles, such as light-duty industrial trucks, golf cars, battery-powered transport for the non-ambulatory, etc.

The new series include the SW80, single pole/single throw; the SW84, single pole/double throw; and the SW88, motor reversing contactor set.

These units are compact (the SW80's less than 4" x 2" x 1½"), fully serviceable and price competitive with sealed automotive-styled solenoids that cannot be serviced, says the maker.

The contactors are rated for 80 amperes continuous to 48VDC. For motor applications above 48VDC, the units are fitted with magnetic blow outs. The SW80s come with coils for 6-180VDC, rated for either intermittent or continuous use. The SW88 has all necessary links for motor reversing and thereby provides considerable assembly-time savings. Because of its electrical configuration, the SW88 requires no mechanical or electrical interlocks.

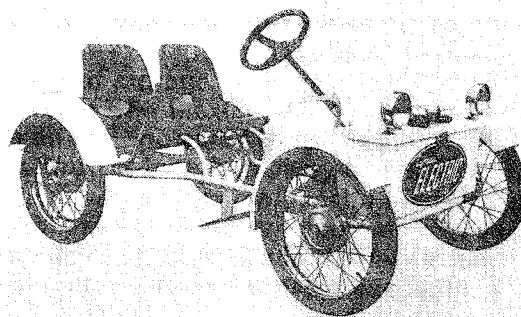
Developed by Albright Engineers, Ltd., in the U.K., these contactors are designed for typical intermittent electric vehicle duty up to 125 amperes and to handle motor inrush currents up to 800 amperes. For further information: Curtis Instruments, Inc., 200 Kisco Avenue, Mt. Kisco, N.Y. 10549.

tidbits...

Ever drive on "flower power"? Now may be the time — for the "daisy" now comes on the fuel scene. To be exact, it's the Diesel Assist Injection System, recently introduced by PetroSystems International, Nashville, Tennessee. The Daisy Booster can be applied to most diesel engines, for metering propane vapor into the mix needed for best engine efficiency. Walter J. McCarthy, Jr., is serving as general chairman this year for the EV Symposium & Exposition that takes place in Dearborn, Michigan, in October. A fortunate situation — for Walter is chairman of the board for Detroit Edison, a utility that has one of the most interesting EV programs to be found anywhere. Occasionally bits of information filter through about EVs being used in geographic locations where EVs have been only slightly publicized. The general impression: smaller on-road vehicles predominate and it's the simply-designed and modestly-performing types that make up the greater part of the EV population. Mostly, they are "work" vehicles, obviously not competing with high-powered ICs. The Canadian Government is considering lower prices for its natural gas exports to the U.S. Currently there is an oversupply of higher priced gas in the United States. A price break from Canada would be welcomed by U.S. consumers — and could accelerate moves to CNG for on-road vehicle purposes. In Washington, the Congress' House Interior Committee has voted 27-to-13 on a bill to clear the way for construction of many miles of coal slurry pipelines. The objective is to move crushed coal mixed with water from the coal fields directly to utility plants. The legislation still has to get a favorable vote from the full House of Representatives. The U.S. natural gas pipeline companies are trying to reduce the amount of high priced gas they are required to purchase under long-term contracts, agreed to in a time when gas supplies were severely limited. These "desperation" contracts have been responsible for excessive upwards price movements of gas in recent months. An analysis of conversion costs by one company indicates that, in 1982, the cost of converting a typical light-weight vehicle to CNG was approximately \$1,800. Attractive savings, however, would accrue from cheaper fuel costs and from reduced maintenance and longer engine life. Norway's Troll field, natural gas, is assured of exploration and development during the coming decade. The expansion has been approved by the government, and private industry is assured a major role in the plan. Although high-compression engines for use of methanol are still not perfected, a General Motors spokesman has predicted methanol-powered vehicles for the early 1990's, and that they will be 35% more efficient, at least, than today's vehicles. England's Battery Vehicle Society now has some 300 members, and is growing. The BVS group performs a real service in extending information on the virtues of EVs to a

broad spectrum of users and potential users. General Motors takes a truly pragmatic view of electrics. A GM executive recently expressed a belief that fuel (gasoline) had to reach \$3 per gallon before a really viable EV could come onto the market successfully. Well, look out! Despite today's "soft" gasoline market a radical change could take place very quickly. Directions in vehicle fuels and fuel systems are changing with startling rapidity. For instance, Vialle, maker of propane carburetion systems, was only a small factory in Eindhoven, Holland, just twenty-odd years ago. Today the company serves a worldwide market, and its new headquarters plant in Eindhoven is considered one of that country's model manufacturing facilities. If good luck prevails, AVN may have last-minute news on the Gulf + Western van about to be introduced. But we can't resist "leaking" a comment — to wit: tests have been extremely impressive on the G + W vehicle. This unit could change the thinking, favorably, about the EV in the "real world" marketplace. Cost of operating a conventional IC vehicle continues upward. The Hertz Corporation's annual study shows that the average cost to own and run a typical compact car has risen in 1982 to 47.21 cents permile — a 2.36 per cent gain over 1981. To know what's really being offered in the automotive area, you may want to mull over the new "World Cars 1983," a book produced each year by the Automobile Club of Italy. It's being

The NEW Lyman Electric Quad



A Small Electric Vehicle for Two

- 3 speeds
- 4-wheel brakes
- Range 40-50 miles
- Speeds to 25 mph

LYMAN ELECTRIC PRODUCTS, NORWALK, CT.

Makers of SUPER TRIKE & other battery-powered vehicles

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tidbits... continued

sold now, at \$39.95 per copy, through Herald Books, P.O. Box 17, Pelham, NY 10803. . . . It's nice to see advance information coming out on an EV exposition ('tis not always thus). Yes, AVERE is already advising us of the 1984 EVS7 to be held in France in June 1984. European EV development has been generally considered more progressive than in most parts of the world during the past few exasperating years. . . . Singapore is almost entirely dependent on fuel imports, and its energy consumption has almost tripled in a very short time. Dependence on petroleum has alarmed government leaders, spurring strong conservation steps. Coal-fired power stations are being seriously considered. . . . Canada's first tidal power plant is expected to be in operation within the next few weeks. It is a 20MW unit on the Annapolis River, northwest of Halifax. Results will be studied to guide possible development of a much larger plant in the Bay of Fundy, which boasts the world's highest tides. . . . Coal dust may be another alternative fuel of the future. The powdered coal, with consistency similar to that of powdered sugar, is used in conjunction with a gas turbine engine. Researchers are experimenting with the system now, with one unit being installed in a Cadillac Eldorado. . . . Fleet owners in California can get a substantial part of their conversion costs returned in the form of a state tax credit when switching from gasoline to methanol. This can be a big incentive — and, of course, a tremendous factor in the state's efforts to reduce pollution. . . . Melvin Emelock, of Plantation, Florida, has been allowed a patent (No. 4,376,097), according to a recent New York Times item, for a hydrogen generator. The basic intent is to produce electricity for charging batteries for electric propulsion. The inventor estimates that 100 pounds of oxalic acid, a basic component, would give an electric car a range of 300 miles. . . . But the hydrogen debate goes on and on. The developments reported to be coming out of the Texas A&M University research efforts are drawing challenges from many quarters. One good result seems

evident: a certain excitement about hydrogen's potential appears to be stimulating much greater efforts to make it a viable alternative vehicle fuel. . . . A good idea can sometimes get "worried" to death! Take vehicles, for instance. Millions of these wonderful wheeled critters are out there every day doing their thing — the fork lifts and golf cars (EVs); trucks, tractors, vans, school buses (Propane and CNG) — and there's very little yapping about tests, R&D, and such things. Alternative fuel vehicles that are really being accepted and used are those that simply do the job and don't get "theorized" to death. . . . Prior to the start of the OPEC robbery there were approximately 170,000 gasoline service stations in the USA. This number is down now to about 130,000 — and still dropping. . . . Seasoned automotive experts are giving increasing attention to alternative fuels. The incoming president of the Society of Automotive Engineers has been reported as saying that "between now and the end of this century that there will be a true shortage of petroleum products. . . we will need to develop some of these alternative fuels that are getting so little public attention today because of the current oil glut". . . . The so-called "induction freeway" continues to stir interest among some EV proponents. The system calls for wiring buried slightly below the surface of main roadways so that a vehicle can pick up power from the sub-surface source, conserving its on-board battery power for areas where the magnetic induction is not installed. . . . Impco Carburetion has received approval of the California Air Resources Board for carburetors and vaporizers for use in some 1983 model vehicles. Approval also covers older models of the same make and engine size. They authorize conversion to either straight propane or dual fuel. . . . Hydrogen-powered vehicles are in test stages in the USA, West Germany, Japan, and possibly elsewhere. Some prototypes use cryogenic methods to store the on-board fuel in liquid form at -250°C. Some use metal hydrides as a means of storage. The Los Alamos National Laboratory, in New Mexico, has logged more than 3,000km on its H-powered Buick, with no mishaps. . . . In the USA one of every six private non-agricultural workers is employed in manufacture, distribution, maintenance and commercial use of motor vehicles — says a recent release from the Motor Vehicle Manufacturers Association. Ed. Note: if we added all the "non-private" bureaucrats meddling in the business (including, of course, those who really do make worthy contributions) we suspect the ratio could easily reach one of every five "workers". . . . From the same source: hourly compensation of automotive production workers in the USA — 1979, in US dollars — was \$16.85, compared with an equivalent \$12.70 in West Germany and \$7.76 in Japan. . . . An editor, necessarily, studies information from many sources. We're pleased to report that a much wider press coverage is now being given to alternative vehicle fuels — to recognition that a "mix" of various advanced fuels and systems are needed and are inevitable. □

FOR SALE: 1981 Fiat Strada 4-door Hatchback with sun roof. Color - blue. Lectric Leopard - Model 964A - 3000 miles. Runs perfect. Car was \$14,000 new. I would like to get \$4000, or consider an offer. John Kennedy 312-687-6398

...and on Page One

It hasn't been an easy job — even with the assisting, but painful, impact of an "oil crisis" — to prove conclusively that on-road vehicles operating on alternative fuels perform very well, indeed. But for several years their worthiness has been clearly demonstrated.

This is not to say that the ultimate fuel and/or vehicle is here. Probably all fuels and vehicles can be improved. Meanwhile, today's alternatives have much to offer. They can perform admirably right alongside their gasoline and diesel cousins.

A good product, however, isn't necessarily all that is required for success in the marketplace. Even when extensive demonstrations prove a product's merits there may remain additional steps to be taken prior to the product's broad acceptance.

Fleet operators frequently have been principal participants in developing, testing and demonstration of advanced vehicles. Such efforts have been highly productive, and, hopefully, will be accelerated. Among all owners of vehicles, the fleet operators probably have the most compelling need for alternatives. They have, also, solid capabilities for proving and improving both fuels and systems. Many fleet owners already have discovered the quick pay-back of changeover costs, the simplified maintenance and reduced down time.

There is another incentive for shifting faster to alternatives. Simply stated, the faster the acceptance the faster we will see improving performance and better values. Competition usually assures such rewards.

The alternative fuels seem well advanced. Possibly they can be improved — or new ones can come along. But it appears that distribution of fuels might be improved. Just compare methods of refueling of any of the alternatives with the systems that support gasoline and diesel needs.

When we experience faster acceptance of alternatives we can expect greater efficiencies such as a highly valued market inevitably seems to stimulate. The fleet owner, by increasing his use of alternatives, can profit now — *and* assure himself of even greater rewards for the future.

Many fleet operators, automotive dealers, manufacturers and others concerned with alternatives have read AVN (formerly EVN) since the 1970s — thus your concerns are obvious. You have more than mere "buyer" and "seller" roles in development of advanced vehicles.

Perhaps now is the time to move beyond *testing* and *demonstration* — to take the next step: the confident acceptance of alternatives, increasing their numbers and the jobs they perform in your own day-by-day operations.

