F.V.E.A.A. NEWSLETTER

June 1992

President
Douglas F. Marsh
336 McKee St.
Batavia, IL 60510
(708) 879-8089

Vice President
Kenneth Woods
1264 Harvest Court
Naperville, IL 60565
(708) 420-1118

Secretary
William H. Shafer
308 South East Dr.
Oak Park, IL 60302
(708) 383-0186

Treasurer
Dale Corel
595 Gates Head North
Elk Grove Village,
Illinois 60007
(708) 228-5952

Editor
Douglas F. Marsh
336 McKee St.
Batavia, IL 60510
(708) 879-8089

Director
John Emde
6542 Fairmount Ave.
Downers Grove,
Illinois 60516
(708) 968-2692

Director
John Stockberger
2S643 Nelson Lake Rd.
Batavia, IL 60510
(708) 879-0207

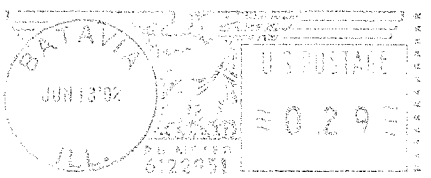
NEXT MEETING

June 19th @ 7:30
College of Dupage
Student Resource Center
Room 1046
Use Lambert Rd. Entrance, Lot 7 at the Southeast corner of 22nd & Lambert
Nonmembers are always welcome!

MEMBERSHIP INFORMATION

Membership to the Fox Valley Electric Auto Association open to the public. Anyone interested in electric vehicles or electric transporation are encouraged to join. The cost to join is $15 per year from November to November. If joining in the middle of the year the cost is a $1.25 for every month remaining in the year to November. The cost for new members joining this month is $6.25.

Fox Valley Electric Auto Association
336 McKee Street
Batavia, IL 60510



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PREZSEZ

Well, it gets more interesting every month. Just when you think battery research is stagnant, the activity heats up. It was always apparent that research was active and that plenty of exotic batteries were being tested, but the bottom line was always that it won't be available for 10 or 20 years and that its going cost a fair junk of change.

Starting last month, Solectria and Johnson Controls demonstrated what could be a very affordable Zinc-Bromide battery. This month the USABC (United States Advanced Battery Consortium) announces its battery technology of choice for continued development. Surprisingly enough it was Metal-Hydride and not one of the Big Three's favorite, Sodium-Sulfur, Nickel-Iron or Lead-Acid. The Japanese, not wanting to be out done, announce their version of the consortium, for battery development in that country.

Today I received a press release about BAT Technologies catalyst additive for Lead-Acid batteries that will retard sulfation, guaranteeing the life of regular lead-acid batteries for 100,000 miles. Just another snake-oil salesman? I don't think so. Their list of references are very reputable and in some cases good friends of mine from the west coast. The electrolyte, dubbed the "Ultra Force", retards sulfation and has a much lower impedance. This will reduce resistance to the flow of power, reduce energy requirements 20%, sustain power output at higher rates, extend operational time, allow discharge under substantial loads down to 5.00 volts, reduce water consumption and increase the number of charging cycles from 400 to 1,500-2,000. The Cost? $16.00 for 18 oz. 6 ounces per cell is all that is required. I will include the full details in next months newsletter.

A number of the club members will be at the Energy Fair in Amherst Wisconsin next week as well as the Milwaukee Summerfest the week following. All of the electrifying details will be given at the July meeting. (Sorry, about the pun, occasionally it has to be done).

Enjoy,

Douglas F. Marsh
President

Minutes of April 17th FVEAA Meeting

The meeting at College of DuPage was called to order by President Marsh at 7:42 PM. There were 12 members and one guest attending.

Treasurer Corel reported $1392.95 in the checking and $1997.51 in the savings account.

After introductions of members and guests, President Marsh reported on the FVEAA participation in the Midwest Renewable Energy Fair. The event will take place in Amherst, Wisconsin June 19-21. Member Steve Clark will provide his Unique Mobility car for display. Transportation being arranged by the Fair organizers will move the car(s) from this area to the fair site and return. President Marsh hoped to include his electric vehicle which is under construction. Member Shafer will present the workshop material featuring slides of his Mazda project.

President Marsh reported the FVEAA has been requested to supply electric cars for display at the Milwaukee Summerfest the weekend of June 27th. No final commitments were made.

Member Shafer reported a solicitation by Rosebud Productions, a commercial TV organization in Chicago, to make an electric car mini-documentary. In his discussion, he pointed out the FVEAA does not have a product or service to market. Since the projected cost of making a 20-min tape of FVEAA accomplishments would be excessive for the organization, the membership decided to revive making our own tape using the skills of member Emde. He has access to Cablevision of Chicago's equipment and facilities. He agreed to prepare a preliminary storyboard for the effort which will be scheduled this summer.

Member Carl Chapman and President Marsh attended the Phoenix 500 EV event. They presented slides, videotape, and comments. There were impressive performances by several vehicles which were reported in the last FVEAA newsletter. Also included was a discussion of Johnson Control's Zinc-Bromine battery in Solectria's vehicle. Unlike last year's event which had a number of solar car entries, only three participated this year.

The meeting was adjourned at 10:38 pm.

Submitted by,

William H. Shafer
Secretary

Burton Says Indy Doesn't Want Electric Car

by Bill Baxter
Reprinted from Nation Speed Sport News

PHOENIX - Former Indy Car mechanic Larry Burton's dream to unveil his controversial electric-powered race car at Indy this year apparently won't happen. Speedway officials don't want any part of Burton's electric racer, fearing "another turbine debacle," according to Burton. Andy Granatelli's turbine "whooshmobile" with Parnelli Jones at the wheel ran away and hid from the competition at Indy in 1967 until an $8 bearing failed and retired the car four laps from victory.

Rules makers legislated away the engine's superior power and the turbine race cars eventually disappeared.

Burton, now an aviation mechanic and aircraft restorer residing in the Phoenix suburb of Scottsdale, says he had sponsor backing to the tune of $6 million if Indy 500 officials would invite Burton's entry to the '92 event.

"I described my car to Indy officials and they've been here to take a close look at it, but they won't issue me an invitation to enter and compete," said Burton. "I haven't heard a word from them.

"Since the folks at Indy arn't interested, I'm planning to showcase the car in another way," said Burton, who has been confined to a wheelchair from polio since 1959. The unveiling could come in a month or so, he said.

General Motors, Ford and Chrysler are all interested in the car as well as automotive manufacturers from around the world, according to Burton, who was an IndyCar mechanic for 17 years.

Burton claims his electric car runs on a single 12-volt battery and could complete the entire Indy 500 without a pit stop.

When asked about the status of the electric-powered car, USAC Director of Competition Roger McCluskey said, "We've sent him the rules. He knows what they are."

READY TO GO — Al Unser, Jr. sits in his Galmer Indy Car in preparation for Sunday's IndyCar event at Phoenix Int'l Raceway. (Jennifer Logan photo).

Upcoming Events

The Energy Fair
June 19 - 21, 1992
Ameherst, Wisconsin

National Alternative Fuels Conference -
"Clean Air Solutions for
Transportation and Engines"
June 30 - July 1, 1992
Milwaukee, Wisconsin

Milwaukee Summerfest -
"Fueling the Future:
A Clean Air Transportation and Engine Show"
June 27 - July 1, 1992
Milwaukee, Wisconsin

ENER-RUN II
Cross Country Rally
August 9 - August 23, 1992
Washington D.C. to Los Angeles, CA

Auto consortium flips switch on new battery

by Chuck Murray
reprinted from Chicago Tribune
Wednesday, May 20, 1992

A consortium of automakers and electric utilities Tuesday chose a battery based on nickel metal hydride for accelerated development and eventual use in electric cars, calling it the beginning of a new phase in automotive history.

The United States Advanced Battery Consortium, which includes the Big Three automakers, the U.S. Department of Energy and the Electric Power Research Institute, made the announcement at the Troy, Mich., headquarters of Energy Conversion Devices Inc., whose Ovonic Battery Division designed the winning battery.

"This changes the direction of the industry," said Stanford Ovshinsky, president and founder of Energy Conversion Devices. "Utilities will become gas stations of the future."

The industry group, however, says it isn't plotting the demise of the gasoline engine, merely attempting to "broaden the capabilities" of electric vehicles by the mid-1990s and make them cost-competitive with gasoline-powered cars by the late '90s.

"If the electric car is going to be as versatile as the gasoline-powered car, we are going to need generations of batteries," said Don Postma, spokesman for the consortium. "This is the first step in developing longer-life and longer-range batteries."

By throwing its considerable muscle behind the development of the new battery, the consortium hopes to give the U.S. an edge in the intense international competition to develop a mass-production battery for electric vehicles. As a result of Tuesday's award, Ovonic receives $18.5 million - hold from the Department of Energy - for continued development of the battery.

Ovshinsky said his company will use the award to increase the battery's range, lower its manufacturing cost and improve it commercial potential. The company has secured a 60,000-square-foot manufacturing facility in Troy and already is planning to move to a larger plant.

Automakers, however, are not abandoning their current plans in favor of nickel metal hydride. At General Motors, engineers are continuing to develop lead-acid batteries for its Impact electric car; Ford has pioneered work in sodium-sulfur batteries; and Chrysler is betting on nickel-iron.

"We're still confident that lead-acid provides the best technology for first-generation electric vehicles," said Keith Pitcher, a spokesman for the Delco-Remy Division of GM in Anderson, Ind., maker of GM's lead-acid battery. Nickel metal hydride, Pitcher said, is viewed as an advanced technology for later use.

The automakers need solutions by 1998, when California law mandates that 2 percent of all vehicles sold in that state meet a zero-emissions standard. A number of Northeastern states have followed California's lead.

Batteries have been the major barrier to volume production of electric vehicles because existing batteries have limited range, a short life and long recharge times. The new nickel metal hydride battery reportedly offers solutions to those problems.

Recharge times, say Ovonic engineers, could be as little as 15 minutes, compared with the 8 hours needed by the lead-acid batteries in GM's Impact. Similarly, the new battery reportedly could double the range of the Impact and last the life of the car; lead-acid batteries would require replacement every 20,000 to 25,000 miles at a cost of more than $2,000.

Skeptics wonder whether nickel metal hydride's advantages will remain intact when the company changes to large-scale production.

As little as a year ago, nickel metal hydride was not considered a viable contender in the race to help power electric cars. It was seen more as a replacement for nickel-cadmium batteries, which are typically used in video cameras, cellular phones, laptop computers and small power tools.

But it made its first major inroads when the Occupational Safety and Health Administration passed regulations that eventually will preclude the manufacture of cadmium, a toxic heavy metal. As a result, metal hydride quickly broke the virtual stranglehold that nickel-cadmium had on certain applications.

Nevertheless, Tuesday's announcement was something of a surprise. Battery manufacturers have long recognized the advantages of nickel metal hydride but until now have been unable to capitalize on its advantages. In the past, it suffered from corrosion and disintegration of the electrodes.

To solve the problem, Ovonic engineers alloyed several elements, which by themselves would have been unsuitable for battery use. But by combining such elements as vanadium, titanium, zirconium and nickel chromium, among others, they produced a material with sufficient bonding strength to resist the corrosive environment of a battery.

"Normally, those materials wouldn't have had the appropriate bonding strength," said Michael Fetcenko, director of technology for Ovonic Battery. "But by alloying them together, we formed a new synthetic material."

Chuck Murray is Midwest technical editor of Design News magazine.

Japan turns up juice in electric car race

by Merrill Goozner

reprinted from Chicago Tribune
May 25, 1992

TOKYO - The auto industry's race to develop non-polluting electric vehicles may turn into a contest to see whose country has the most effective industrial policy.

Japanese government officials have decided to launch their own foray into electric vehicle research and development after seeing their carmakers excluded from a U.S. government-led consortium formed for the same purpose.

The Ministry of International Trade and Industry, or MITI, recently earmarked $108 million over 10 years to develop the battery technology needed to improve electric-vehicle performance to the point where they can replace gasoline-powered vehicles.

Japanese government labs and private companies will submit proposals this fall.

MITI will award its initial contracts before the end of the year.

"We want to encourage cooperation to develop a new battery with high performance," said Yoshisue Tsunoda, director Moonlight projects at MITI's Agency for Industrial Science and Technology. "It's not a race with any foreign countries."

Forget that. MITI took a keen interest last fall when President Bush broke with his usual stance on refusing to pick industrial winners and losers and threw his support behind the Advanced Battery Consortium, which includes the Big Three automakers, electric utilities and the U.S. Department of Energy.

Declining his intention "to beat our competitors to the [electric vehicle] milestone," Bush pledged $260 million over 10 years to the consortium, which came together to invent the next generation of automotive batteries.

The goal is to give the U.S. auto industry the lead in developing practical electric vehicles, which most observers predict will take a larger and larger share of the auto market as consumers and governments become more environmentally conscious.

Automakers around the globe are scrambling to come up with marketable electric models. Current prototypes are limited to 100 miles or less between charges or use prohibitively expensive battery technologies.

The automakers have been spurred on by bellwether California legislation requiring that 2 percent of all vehicles sold in the state be zero-emission vehicles by 1998. Japanese automakers control about half the California car market.

General Motors Corp. has taken the lead in developing marketable electric vehicles. The world's largest automaker plans to begin selling its two-passenger electric car, code-names Impact, in 1994.

The vehicle uses 32 lead-acid batteries that require an eight-hour charge every 100 miles. GM, which is planning both a left and right-side drive version of the vehicle, plans to market it as an about-town runabout.

Japan may emerge as one of the key markets for the new vehicle. "We think we have a real opportunity here," said Ronald Carwardine, vice president for GM-Japan. "A lot of surveys we've done show the people are very interested in innovations and new technology and have a lot of disposable income."

The U.S. also appears to be taking the lead in developing reasonable priced battery technologies that will increase the time and distance between charges and improve electric-vehicle power, a key measure of highway driveability.

Last week the U.S. consortium awarded its first contract to Energy Conversion Devices Inc. of Troy, Mich. The $18.5 million award will further its pioneering research into nickel-metal hydride batteries, which, along with Ford Motor co.'s patented sodium-sulfur battery, are considered the best bets for replacing the traditional lead-acid batteries used in most electric vehicles.

But how long U.S. companies remain front-runners remains to be seen. When MITI bureaucrats first requested money to fuel electric-vehicle research and development, the tight-fisted Ministry of Finance turned them down. But after Japanese carmakers were refused entry into the U.S. consortium, the ministry relented and gave MITI funds to spur on research into electric.

"We were excluded," said Masazumi Ishikawa, manager of the Japan Electric Vehicle Association's international division. The group represents 90 auto, battery and electronics makers. "Some of the Japanese companies wanted to be cooperative, but the U.S. Big Three wanted their own joint development."

Japanese carmakers usually have a standoffish relationship with MITI because of the agency's attempt to promote mergers in the 1960s. Most have pursued electric vehicle research on their own, sometimes in conjunction with their battery suppliers.

The results were on display at last fall's Tokyo Auto Show, where 14 experimental vehicles were unveiled. However, most used exotic and therefore expensive battery technologies - some

with environmental problems - and only three have had even limited productions runs.

For instance, Nissan Motor Co.'s still-unfinished electric vehicle uses a nickel-cadmium battery developed with Japan Storage Battery Co. Although the system allows the prototype two-seater to travel 150 miles at constant speeds and can be 40 percent recharged in six minutes, the materials used in the battery drive its cost above $50,000, industry observers said.

Moreover, cadmium, a material widely used in the consumer electronics field, is highly toxic and hard to recycle. Those are major problems with the huge volumes of the automobile industry.

In March, Sanyo Electric Co. unveiled a two-seat electric car that used a combination of rechargeable batteries, solar cells and fuel-cell technologies. However, the basic battery also was nickel-cadmium.

Toyota is keeping a low profile on the specifics of its electric vehicle plans. However, a spokesman told the Japanese press the company is pursuing lead-acid and zinc-bromide technology.

Meanwhile, Daihatsu Motor Co., a member of the Toyota group, began marketing an electric-powered delivery van last year and sold 200 to local governments. The company plans to double production this year. The Environment Agency has offered to pay half the cost for any local government buying an electric vehicle.

Isuzu Motors Ltd. and Co-op Electric Vehicle Development Co. last year developed a prototype of a two-ton EV commercial truck. Although the truck costs more than $160,000, the co-op pians to order 3,000 of the trucks by 2000.

Indeed, it's the Japanese government's willingness to use a full range of industrial policy gimmicks - subsides to buyers, tax breaks, research subsides - that may be the nascent industry's ace in the hole. MITI has issued a "challenge" to Japanese automakers to have 200,000 electric vehicles on Japanese highways by 2000.

Action by Massachusetts, New York Said to Ensure LEVs for Northeast

Reprinted from Air/Water Pollution Report
April 6, 1992

Moves by Massachusetts and New York to adopt the so-called California car virtually ensure its sale in nearly every northeastern state by 2000, environmental regulators predict.

The two states have about 55 percent of the automobile market among the six New England states, New York and New Jersey, according to EPA figures. With New Jersey expected to adopt the low emissions vehicle (LEV) program this summer, sales of LEVs would be required in more than 75 percent of the northeastern market.

State and regional regulators told A/WPR that when New York finalizes its LEV program, as Massachusetts did in February, the auto industry will find LEVs mandatory in some of its largest markets. This, they say, will make it more difficult and expensive for the industry to manufacture and sell low-polluting cars in some parts of the region but not others.

LEVs Just 'a Matter of Time'

"It is only a matter of time before all states in the region will adopt the program," said Michael Bradley, executive director of Northeast States for Coordinated Air Use Management. "Some states may hold out for a while, but they will come around."

Last fall, officials from New York, New Jersey, Pennsylvania, Virginia, Maryland, Delware, five New England states and the District of Columnbia agreed to require LEVs. These jurisdictions and California make up 40 percent of the national car market.

Since then, the District has had second thoughts, while LEV legislation has been rejected by the Maryland and Virginia legislatures. Air officials in these states say the issue will come up next year, with ever-increasing momentum. Pennsylvania and Delware are drafting rules to require the cars.

"When the northern states go [to the program], we will inevitably follow," said one Virginia air official. "When you look at the long-term benefits of the program, nothing matches it."

Connecticut, which did not participate in last fall's regional agreement, has since said the car is not absent from its long-term air quality improvement equation.

Electric Bike for Factories

The Australian
March 10, 1992

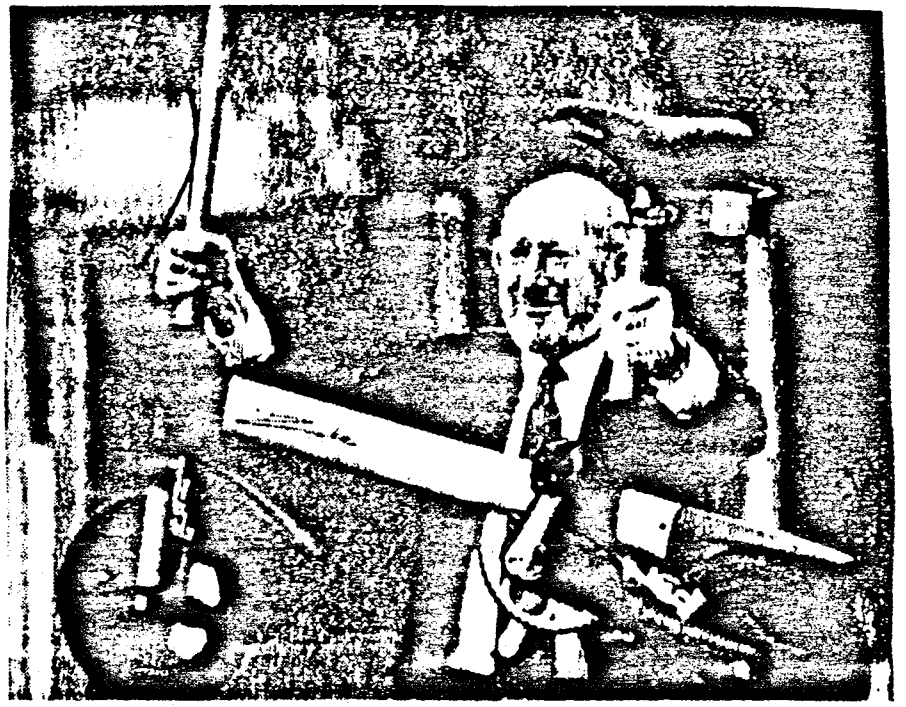
A British inventor unveiled Zike today, a lightweight, rechargeable electric bicycle.

Sir Clive Sinclair said the ($1,145 Australian) bicycle with small wheels, weighs under 11kg and has a top speed of 19 km/h.

He said powerful magnets allowed for a small motor while nickel cadmium batteries allowed for fast recharging. At full power, the bicycle can run for about a half hour. Sir Clive said "Pedaling extends the lift of the batteries".

Editor of London Cyclist magazine, Mr. Andy Dickson, was the first to try out the bike, which is made from lightweight aluminium.

"It feels more like a moped." Mr. Dickson said, "Sturdy is not the word I would use to describe it."



Sir Clive with his Zike — Reuter Picture

Sir Clive said the typical buyer would not be a cyclist but someone who wanted an inexpensive but quick way to get around town.

Mr. Dickson said he would not recommend the Zike for commuting in heavy traffic.

"You don't have the acceleration and the stability is tricky," he said, adding that it would be well-suited for use in a large factory, warehouse or ship.

Sir Clive, whose C-5 electric car flopped in 1983, said Zike will be available in Britain initially by mail order but eventually he hopes to sell it around the world.

Power Outages

reprinted from
Air/Water pollution report
May 11, 1992

Besides their high cost and short cruising ranges, electric vehicles have other problems. The safety aspect was demonstrated at the annual Solar & Electric 500 race at Phoenix International Raceway. It wasn't a crash that sent driver James Worden of Arlington, Mass., and 14 other people to the hospital. They required medical treatment after breathing poisonous zinc bromide fumes that leaked from the battery on Worden's car. That's one problem that the Los Angeles Department of Water and Power won't have to face anytime soon. The agency gave a Swedish firm, Clean Air Transport, $4 million as seed money toward the firm's goal of producing 1,000 electric cars for sale in Los Angeles in 1993. Officials say CleanAir is having trouble finding the additional financing needed to build the cars. Southern California Edison was to have provided $7 million, but it shut its wallet after putting up only $500,000.

EV World Record on Public Road

EVAAP Newsletter, April 1992

Swiss prototype auto manufacturer Horlacher AG demonstrated one of the most advanced EV which showed the longest range per charge of 526 km (new world record) on public roads. The EV left Zurich in the morning of March 4th and ran on the motorway to Geneva for 290 km at an average of 90 km/h, and then on public roads to the Geneva Auto Show.

Specifications and performance are:

Vehicle - Curb Wt. 480 kg, 2 seats.
Battery - Na-S by ABB, wt. 200 kg
Required charging 4-5 hrs
Motor - 24 ps
Max. speed - 125 km/h
Acceleration - 0 to 50 kph: 7.5 sec.

Europeans plunge into developing electric car

by Terrill Jones
Reprinted from Chicago Sun-Times
Tuesday, March 31, 1992

Geneva - From boxy buses and quiet pickup trucks to bubble-like golg carts, electric cars are the transportation of tommorrow.

Or are they?

Technology for electric vehicles is still in its infancy. Battery-powered cars don't go very far or fast, and they cost a lot to buy. Chemicals used in the batteries are hazardous.

Nevertheless, like their American counterpoarts, European automakers have plunged into developing electric cars, which they showed off at this month's International Auto Show in Geneva, Switzerland.

The companies are spurred partly by environmental altruism, but also by the reality that by 1998 California will require 2 percent of all major manufacturers' vehicles sold in the state to be free of tailpipe emissions.

The quota will rise to 10 percent by the year 2003.

Like their American and Japanese counterparts, European carmakers are studying battery-operated cars that can be recharged on a household current.

PSA Peugeot Citreon: A leader in electric vehicle research, it has already sold some 300 of its Forgons to France's national electric power company and to city governments. The Forgons are station wagon-like trucks.

By 1995 Peugeot will market electric version of its smallest cars, the Peugeot 106 and Citreon AX, which will have a range of 75 miles and a top speed of 56 m.p.h. The battery, rechargeable overnight, would be rented for a monthly fee that's comparable to the cost of gasoline.

"We anticipate volume sales, and hope eventually to sell 50,000 a year," said Hugues Dufour, a spokesman for Peugeot Citreon, Europe's third-largest automaker. "We're aiming for the same price, or even lower, as a conventional 106 or AX, minus the battery."

Volkswagen: The Chico has a range of more than 62 miles with its "nickel-metal hydride" battery, which is more powerful than conventional lead acid or sodium sulfude batteries.

Chico, like many electric cars, is not yet ready for commercial sale. But Volkswagen, Europe's largest carmaker, has sold more than 100 electric versions of the popular Golf, mainly to city governments and public organizations.

Two sodium-sulfur batteries give the Golf a range of 125 miles, said Adolf Kalberlah, VW's manager for electric propulsion.

Fiat: Europe's No. 2 automaker has sold some 350 Panda Electras in the past two years, mostly to local authorities and utility firms.

An electric version of Fiat's tiny but beloved Cinquecento is now being made available. With a 44-milerange, it's suited for limited city driving, though nickel-cadmium batteries can extend the range.

But the electric Cinquecento is 2.7 times more expensive than the standard model, and demand is so low the car is virtually being built by hand, Fiat officials said.

For all their efforts, some of the automakers are less than enthusiastic about electricity's potential. They concede the cars don't go as far as most drivers would like without recharging the battery.

"California needs ranges so large thta people can't do anything with Golf lead acid batteries -they're useless in America," said Kalberlah.

"We don't see a future for electric city car," Mercedes Benz electric car engineer Joachim Kaden bluntly told Autocar and Motor magazine in January. "That would create a two-class society and is not a feasible solution."

In California, "They can force us to sell electric cars, but nobody can tell people to buy them," Kaden told the magazine.

But even Mercedes is forging ahead in the electric car market. The company fitted its 190 model with an experimental battery that takes 14 hours to charge-and adds $35,700 to the car's already hefty price.

Rival BMW has developed the battery-run E1, a little station wagon with a sodium-sulfur battery. But no need to hold onto your hat when you floor the accelerator: The E1 goes from zero to 50 mph in 18 seconds, an eternity by internal combustion standards. It nevertheless has a respectable top speed of 75 mph, with a range of up to 162 miles at lower speeds.

Not surprisingly, the Japanese are forging ahead as well. At the Geneva show Mazda showed off its experimental HR-X, which bears a hydrogen rotary engine, while Nissan displayed its FEV (future electric vehicle), which can charge fully in 15 minutes.