

# F.V.E.A.A. NEWSLETTER

JULY 1991

PPRESIDENT  
V n Shafer  
308 S. East Ave.  
Oak Park, IL 60302  
(708) 383-0186

VICE PRESIDENT  
Kenneth Woods  
1264 Harvest Ct.  
Naperville, IL 60565  
(708) 420-1118

TREASURER  
Vladimir Vana  
5558 Franklin  
LaGrange, IL 60525  
(708) 246-3046

SECRETARY  
Paul Harris  
9421 N. Kildare  
Skokie, IL 60076  
(708) 674-6632

EDITOR  
Richard Sachtshale  
1018 Jackson St.  
Aurora, IL 60505  
(708) 898-6403

Newsletter items should be  
submitted to the Editor  
by the first friday  
of the the month

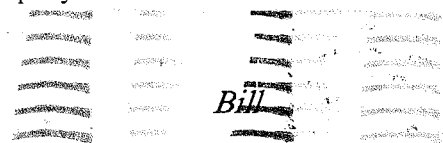
Nonmembers are always welcome

NEXT MEETING  
JULY 19th 7:30 P.M. SHARP  
Room 157, doors open @ 7:00  
Use Northeast entrance of  
Building K, College of DuPage  
22nd & Lambert, Glen Ellyn

## THE PREZSEZ

The next meeting on July 19th will again be held at the College of DuPage. A report on the FVEAA participation at the Midwest Alternative Energy Fair in Amherst, Wisconsin June 21-23 will be given and we will discuss recommendations for next year's event. Thanks to Paul Harris and the other members for conducting the June meeting in my absence. Ken Woods will also provide additional information on our scheduled appearance during Naperville's last fling in September.

Our technical discussion will feature guest speaker Rodney Antrim who represents Advanced DC Motors, Inc of Syracuse (NY). He will present data on their DC motors and power contactors available from his company. His information should aid members wishing to initiate a conversion project.



## FOX VALLEY ELECTRIC AUTO ASSOCIATION

1018 Jackson St.  
Aurora, IL 60505



ADDRESS CORRECTION  
REQUESTED

John Emde  
6542 Fairmont Avenue  
Downers Grove, IL  
60516

FIRST CLASS

...  
:  
:  
...

...  
:  
:  
...

The meeting was unofficially called to order at 7:31 P.M. by Paul Harris, acting President while our President was in Wisc. OUTSIDE THE DOOR TO THE MEETING ROOM, because no one had a key and the room was locked. Once we were inside the meeting was officially opened at 7:50 P.M. and Treasurer V. Vana gave his customary detailed report. Checking account...\$2,094.59 and Savings...\$951.35 for a grand total of \$3,045.90..

The following eight members were present. Paul Bowarchuk..Carl Chapman..Steven Clark..Paul Harris..R.W. Johnson..Chuck Ketchik..John Newton..and V. Vana. It seems that because we were such a small group we had a very lively discussion during the evening about a lot of topics to everybodys satisfaction...some of the comments...nice meeting, new ideas...good meeting...get news letter out sooner... great meeting..everybody talked....let's follow thru with suggestions.....

John Newton led off the talks and discussed the problems with Mr. Vanas auto. It was resolved that hopefully all problems will be solved soon. Thereafter followed a discussion on the merits and problems of a CAR HEATER.

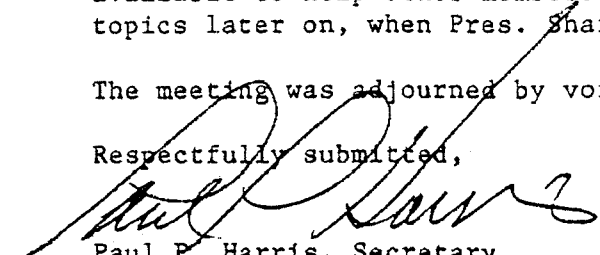
Paul Harris brought up the idea of the members actively keeping the ears and eyes open for someone who may have a building, shop or garage of approximately three to five thousand square feet that we might be able to use at no cost ( as a type of donation to a non profit organization ) or a very little cost, so that our members could have some place to bring their cars and be able to get some expert advice and help from other members. Paul Harris will actively try to seek out such a situation and report back in the near future.

Other item brought up...Outside bulletins should be brought to the meeting ...and our bulletin should be sent out earlier..there should be more cooperation and help from the membership in getting articles and items for the bulletin in sooner so that our editor can do the job without shouldering the entire burden himself. Our membership list should be updated and published as soon as possible and also we should check to see that everyones name is listed and that they are on the mailing list...some members have stated that they do not receive the mailings.

There was also a discussion on the need for more technical seminars from our various experts....so that some of our less knowledgeable members can become better and then be able to help others newer members that will be coming along. We need to try to go thru our membership list and see which of our members are RESOURCE PEOPLE that have experience to share...contacts for various parts and service...time available to help other members..etc..etc.....there will be more coming on these topics later on, when Pres. Shafer gets back in action...stay tuned.

The meeting was adjourned by voice vote at 9:37 P.M.

Respectfully submitted,

  
Paul P. Harris, Secretary

## Overview Information

# DEMI Model 5 Automotive Traction Zinc-Air Cells\*

Enabling technology for the design of Electric Vehicles that are:

- range, weight, and cost competitive with hydrocarbon powered vehicles

Breakthrough energy density of 200 Wh/kg which is:

- 8X Lead-Acid
- 4X Nickel-Iron
- 2X Sodium-Sulfur (high temp.)
- .5X gasoline engine system

162 Wh/kg usable energy density directly observed in Chrysler minivan street testing.

Ultra-low materials cost of:

- \$4./kWh (reactants)
- \$12./kWh (system)

projects to less than 1/2 the cost of Lead-acid batteries in mass production.

## Features & data per cell:

1.2V, 400Ah nominal in 2.5kg (5.5lbs).

Room temperature operation.

Wall plug rechargeable via conventional DC charging.

Maintenance-free gelled electrolyte.

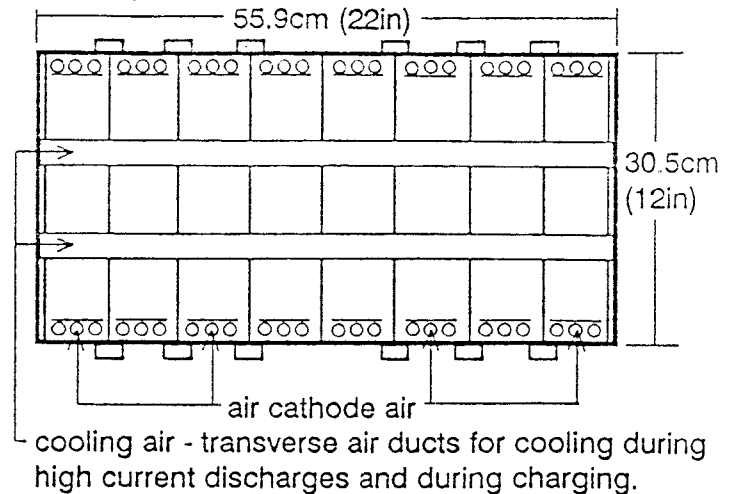
Inherent safety from fire resistant and short-circuit resistant chemistry.

Configurable to any cell multiple of voltage and current.

\* Covered by U.S. Patents #4,894,295, #4,913,983 and #4,957,826. Additional U.S. and Foreign Patents pending.

## Physical Characteristics

Cell Top View



Cell Side View



Terminals: high current solder tabs

## System Requirements

Must have an Air Manager which provides:

- a.) sealed storage when not in use.
- b.) air flow regulation of 4-10 times the actual air use rate which is: 13.6 L/min (0.48 cfm) per kW of power draw.
- c.) oxygen pressure release on charge.
- d.) scrubbing CO<sub>2</sub> from the inlet air.
- e.) moisturizing inlet air.

## Operating Life

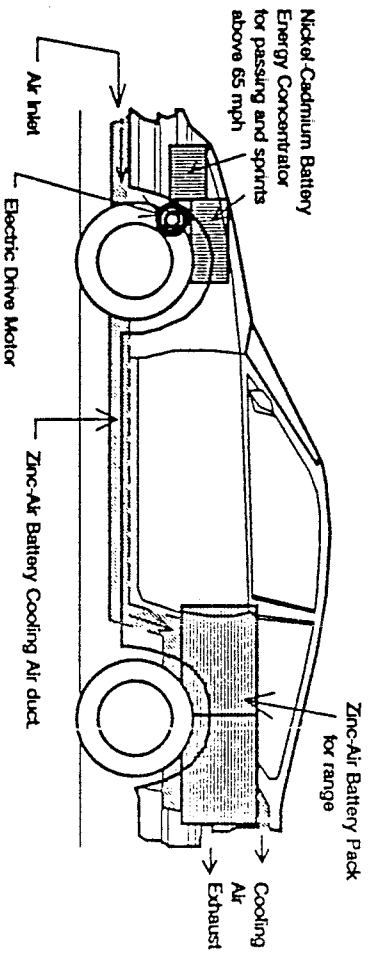
Lab tests of early development Zinc-Air cells have yielded total energy delivered over life comparable to Lead-Acid batteries on a weight basis in some EV applications. (Approximately 2500 Wh/kg to a minimum useable vehicle range of 25 miles.)

Zinc-Air battery life is projected to ultimately be 2 to 3 times Lead-Acid life on a total energy delivered per unit weight basis yielding operating costs equivalent to \$1.50 to \$2.50 per gallon gasoline in various vehicle configurations (assuming mass production priced batteries).

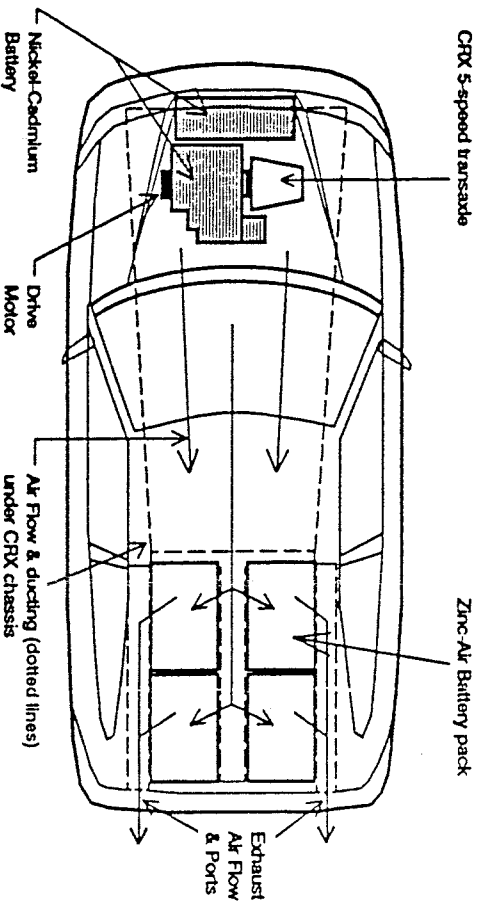
# The Arizona Public Service and Southern California Edison sponsored Zinc-Air CRX

## Preliminary Specifications

Side View



Top View



**Chassis:**  
1991 Honda CRX HF

**Performance:**  
- 87 mph top speed observed

**Drivetrain:**  
Series wound DC traction motor into the CRX 5-speed transaxle

Rated 46 hp peak, 20 hp continuous

**Power:**  
125 V @ 400 A (50 kW), 6 kW to 10 kW typical power draw in suburban driving.

**Main Battery:**  
132 DEMI Model 7 Zinc-Air cells • 45 kWh nominal @ 750 pounds weight

**Energy Concentrator Battery (Electronic Flywheel):**  
108 aircraft jet engine starter 40 Ah NiCd (Nickel-Cadmium) cells, 4 kWh @ 350 lbs wt.

**Battery Configurations:**

- Zinc-Air only
- NiCd only
- Dual NiCd battery packs (216 cells)
- Zinc-Air float charge NiCds (normal configuration)

**Charging:**

- 12 minute flash charge yields 40 miles @ 30 mph.
- 1 hour yields 100 mile nominal range.
- Overnight for full capacity.

**Vehicle Weight:**  
2400 to 2800 pounds dependent on battery configuration.

**Vehicle Configuration:**  
Front wheel drive two-seater

- 215 miles at a nominal 45 mph was observed on a single charge in preliminary testing on March 30, 1991 (APS officially observed test).  
Projected Ranges based on March 30th test data:

Nominal Speed (mph)	Energy Consumption (Wh/ml)	Range (in miles)
30	124	322
35	145	275
45	186	215
55	228	175
65	270	148
75	311	128

Note: In each case the car still has an additional 20 to 30 miles of 30 mph emergency reserve (limp home) capability.

**Zinc-Air CRX Project Participants**

Vehicle Developer:  
Dresbach ElectroMotive, Inc. (DEMI)

Principal Vehicle Sponsors:  
Arizona Public Service (APS)  
Southern California Edison (SCE)

Additional Sponsors:  
Chassis, suspension tuning and mechanical spares:  
American Honda Motor Company

Tires:  
Goodyear Tire and Rubber Company

\* Covered by U.S. Patents #4,894,295; #4,913,983 and #4,957,826. Additional U.S. and Foreign Patents pending.

## THIS ELECTRIC-CAR BATTERY REFILLS LIKE A GAS TANK

**S**omeday soon, drivers pulling into a service station to "fill 'er up" might want battery fuel, not gasoline. Luz Industries Ltd., an Israeli solar-energy company, has developed a refuelable battery for electric cars. Forget about overnight recharging, says Yehuda Harats, president of the Jerusalem-based Luz Electric Fuel subsidiary: The battery's 20 gallons of zinc-based slurry, which generates electricity by reacting with oxygen in the air, would be drained and replenished in about five minutes.

Each fill-up would last for about 300 miles, and the depleted slurry would be collected by the oil companies, recharged, and then resold at their filling stations. Early next year, Luz plans to demonstrate its battery with a 400-mile spin around California, then kick off production in 1994. Initially, the refuelable battery will be expensive—roughly \$10,000—but the company expects the price to drop to around \$2,500 with volume production.

## DEMI Scores Again

### Zinc-air battery 'impressive in Phoenix win

Dreisback Electro Motive Inc. of Santa Barbara, CA. got the checkered flag at the Solar & Electric 500 on April 7, averaging 60 miles per hour while completing 108 laps on the one-mile oval track at Phoenix International Raceway. It qualified averaging 69.4 mph.

Len Danczyk, director of market development for DEMI said "We would like to sublicense the technology to automotive companies that adopt the concept of zero-emission vehicles and use our proprietary technology," he said "This could take the form of a spin-off company that would be funded in part by an automotive company partner committed to this concept."

This would put DEMI in the role of partner, not vendor, in the engineering and production of electric vehicles. He said "DEMI could provide the zinc-air battery to auto manufactures on an original equipment manufacturer basis.

DEMI purchased the CRX from a California dealer. Later American Honda Motor Co. joined the effort by furnishing parts and another CRX as a support vehicle, as well as loaning racing experts for suspension tuning.

## Dealership Announces Production Plans

California Electric Cars will be located at 1669 Del Monte Avenue near Heitzinger Plaza Auto Center in Seaside, California. They began production of their new electric vehicle this week. Called "The Monterey", it is the first electric vehicle of original design in the past 10 years to be sold in the United States. Orders Placed today will be filled within 60 to 90 days.

The Monterey will retail for \$19,995.00 and will be available in two-door sports coupe and eventually four-door family sedan. The Monterey will travel from 45 to 65 miles per hour which makes it ideal for local commuting. C.E.C. will also perform electric conversions on pre-existing cars. Research and development plans include in-

corporating Hi-Tech batteries for longer distance running cars.

Founder and CEO of California Electric Cars, Inc., Craig Campbell has been interested in electric vehicles since the 1970's. "Prototypes were very flimsy as conversions were being done on Volkswagen Bug chassis which couldn't accommodate the weight of the batteries," recalls Campbell.

Last year Campbell met Herb Adams of Carmel, reputable auto design engineer for championship auto racing vehicles, who did the design and engineering for the prototype to be sold at the Seaside location. Herb made sure the models were built so that the weight of the batteries will be more evenly distributed and the frame had structural integrity."

"We are very pleased to play our part in promoting a cleaner, healthier environment," commented Campbell. "since the cars use electricity as fuel, they are pollution free; they are the cleanest form of transportation available."

The establishment of C.E.C. on the Monterey Peninsula coincides with the emission control standards recently passed in California. At the end of 1990 the California Air Resources Board mandated that by 1998 two percent of all new vehicles sold in the state must be zero emission. By the year 2003, ten percent, or 500,000 electric or alternative fueled vehicles must be on the roads in California.

For more information call 408/899-2012. ■

### California Electric Cars, Inc.

**Weight:**

2,500 pounds with  
16 batteries

**Top Speed:**

70 miles per hour

**Mile range:**

60 - 100 miles

**Battery Pack:**

16 - 6 volt lead-acid

**Power:**

96 volt D.C.

