



DEMI'S *Mike & Charity Star @ 86 RALLY*

MIKE & CHARITY CHEICKY OF DREISBACH ELECTROMOTIVE, INC. SANTA BARBARA, CA

DISPLAYED THIER WORLD ACCELERATION RECORD RACE CAR & LITHIUM POWERED TOYOTA

The RALLY was beautiful to behold this year. We witnessed the first competition with Lithium/Air batteries, a sign of things in the 21st Century. We are sorry that so many of you remote members are unable to witness or take part in this annual event.

Following the Rally we had an unusually enlightening Symposium. We will try to share our experience at the symposium with you who could not attend.

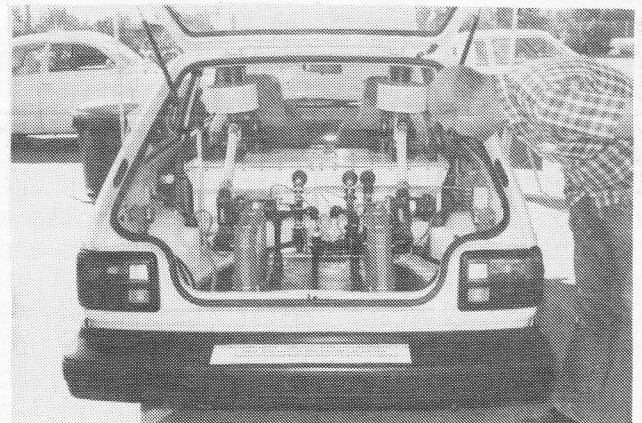
The National Aeronautics and Space Administration provided us an expert scientist to talk about CO₂ accumulations in our atmosphere. Their authority, Mr. Jim Castings, presented the data from their long term studies of the earth's atmosphere. He presented charts showing variations in the ice caps over the eons of history as the CO₂ varied. He concluded we might see ½ degree C change in 100 years. The proximity of the sun to the earth seems to be the greatest governing factor and comes in cycles of 1100 years each. Fossil fuels will alter our atmosphere but his data at this time does not indicate that the changes will be catastrophic.

Next we heard from Rick Barlin of Curtis PMC of Dublin CA. Rick presented a circuit diagram for his regenerative braking system with a series motor and PMC controller. He emphasized the fact that there was little energy to be gained from his system. It is primarily a braking system. Two contactors and a diode must be added to your circuit. He recommended that you check with your control manufacturer before installing this circuit.

The most revealing and interesting talk was by Mike Cheicky of Dreisbach Electromotive, Inc. of Santa Barbara, CA. We have all been patiently following the Aluminum/Air

battery development thru the laboratories and into our golf carts this year. At the symposium we heard about Al/Air battery's big brother. He has stepped up to bat. He looks like a real pro. Mr Cheicky claims the Lithium/Air battery is the "Ultimate" chemical battery. We do not disagree.

The technology is more powerful than gasoline and can be internally serviced under normal shop conditions with out special equipment.

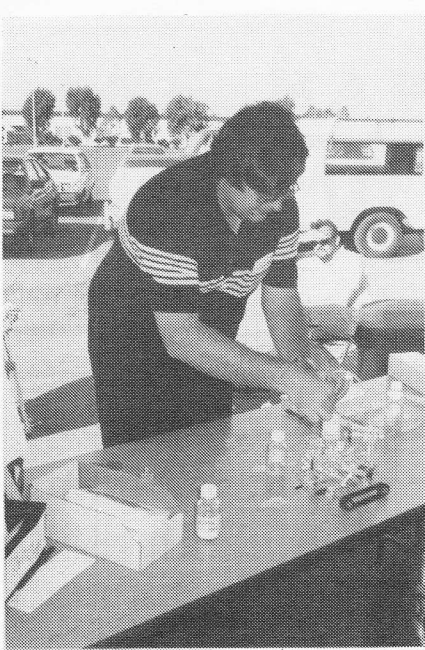


Here is a glance at Lithium propulsion:

- * Up to four times the energy density of gasoline.
- * Greater than four times the efficiency of gasoline.
- * Non polluting and rechargeable.
- * Electric four wheel drive, allows computer control at each wheel independently.
- * Spectacular acceleration and performance.
- * Prospects for very economical operation, long term.
- * Now ready for high performance race car development.
- * A strong contender for many 21st Century general transportation applications.
- * The storage of raw lithium metal is a safety problem which must and probably can be solved before the public can utilize this chemical battery.

Turn to Pg. 2

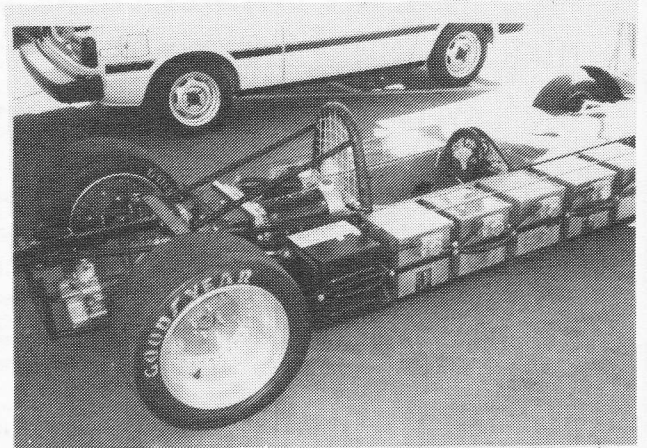
DEMI

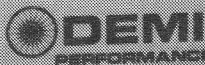


A small operating model was demonstrated. The lithium is continually reused. The components are mostly plastic. There is a cell stack much like a battery, an air compressor or fan which supplies pressurized air to the cathodes, an electrolyte which has varying concentrations of lithium in it, a circulating pump to circulate the electrolyte through the battery stack, a radiator for automobile applications because we can produce a lot of energy and have some waste heat, plus a precipitator which removes the lithium compound as lithium hydroxide or carbonate. The cell voltage is between two and three volts and they have run at power densities of about one ampere per square centimeter. Theoretically there is lithium, oxygen and water to produce lithium hydroxide plus power. Since it is not handy to carry water in a car they use carbon dioxide instead, resulting in lithium carbonate as a precipitant.



The basic patent was issued about 1977. Early experiments demonstrated 80% efficiency. The total efficiency from wall plug to motor has been measured at 56 to 65%. The system is low cost, clean, quiet, non polluting, no carcinogens and runs at room temperature. The ultimate system will allow the automobile owner to exchange a lithium cartridge at a gas station. The station would have the means of recharging or recovering the raw lithium.



DEMI X-1A ELECTRIC RESEARCH VEHICLE		
OUTRUNS ANY CURRENT PRODUCTION SHOWROOM STOCK VEHICLE, INCLUDING: PORSCHE, CONVERSE, OR FERRARI.		
HAS BROKEN 6 FIA WORLD ACCELERATION RECORDS FOR ELECTRIC VEHICLES (1982-1983)		
STANDING START	BEST TIME	BEST SPEED
1/4 MILE	14.49 SEC.	83 MPH
1/2 KILOMETER	16.78 SEC.	97.33 MPH
1 KILOMETER	27.89 SEC.	114.16 MPH
1.3 MILES (DIRT)	N/A	147.3 MPH
HAS ACHIEVED THE EQUIVALENT OF 280 MPG AT 57 MPH		
DESIGN GOALS: 200+ MPH AND 800+ MPG AT 60 MPH		
RANGE: APPROXIMATELY 50 MILES AT 60 MPH		
USES UP TO 12 JET STARTER RC CAR BATTERIES TO PRODUCE 280,000 WATTS OR 280 HP		
THE DRIVE TRAIN AND RC CAR "LOAD LEVELER" TECHNOLOGY IS DIRECTLY APPLICABLE TO HIGH PERFORMANCE LITHIUM VEHICLES		
 DEMI PERFORMANCE ELECTRICS		

EAA members were privileged to be witness to the initial testing of Lithium/Air cells at Lockheed Research Laboratories in Palo Alto, CA. We were delighted to see that Mike Cheicky has carried these most energetic and dangerous experiments to a successful conclusion and into road vehicles. Congratulations Mike & Charity. For more info: DEMI 212 Anacapa St. Santa Barbara, CA 93101 (805)965-0829.

THIS FINE REPORT WAS WRITTEN BY
OUR FEARLESS LEADER
John Newell

NEW FORMAT A WINNER

PHOTOS BY Bob Wheeler

1986 Rally



Many thanks to Rallymaster STEW PERKINS for all his efforts in bringing together our annual EVA Rally, held August 16th in Ontario. It was even more successful than our 1985 Rally which featured 11 vehicles. This year 12 EVs participated, and two of them surpassed the previous endurance record of 85.8 miles! As part of the program in our September meeting, Stew presented the awards and recapped the Rally with the following results:

PLACE	NAME	CLASS	TYPE	VOLTS	NO. BATTs.	WEIGHT	LAPS	MILES
1st	Paul Akman	2-wheel	Homemade Moped	48	4	----	28	72.8
2nd	Paul Overpeck	2-wheel	10-speed Huffy	12	1	160 lbs.	8	20.8
1st	Ken Koch	3-wheel	Alco/KTA Trike	36	6	648 lbs.	35	91.0
2nd	Harry Riggs	3-wheel	Akkord Trike	24	2	----	12	31.2
3rd	Shawn Beltramo	3-wheel	Akkord Trike	24	2	----	10	26.0
4th	Vic Schisler	3-wheel	Homemade Trike	36	6	----	9	23.4
1st	Jack Ruebsamen	4-wheel	Mazda RX-100	96	16	2900 lbs.	38	98.8
2nd	Jason Beltramo	4-wheel	Electro Bug	48	8	----	24	62.4
3rd	Al Vivian	4-wheel	24 Mod. T Speedster	72	12	2000 lbs.	20	52.0
4th	Leo Schatzl	4-wheel	Honda 600	60	10	2500 lbs.	15	39.0
5th	(Vic Jager)*	4-wheel	Mazda RX-2	96	16	3030 lbs.	11	28.6
6th	Jay Boyce	4-wheel	65 Datsun Wagon	96	16	3000 lbs.	0	0.0

*Driven by various drivers.

LEO AWARD (Best Electrical Efficiency)--Jack Ruebsamen's Mazda

ED AWARD (Most Mechanically Innovative)--Al Vivian's 24 T

VIC AWARD (Most Practical)--Leo Schatzl's Electro Bug (driven by Jason Beltramo)

A tip of the EVA hat goes to LEO SCHATZL for single-handedly bringing 4 of the participating vehicles to the Rally! Unfortunately, we (cont'd pg. 4)

DEVC 1986 EV RALLY

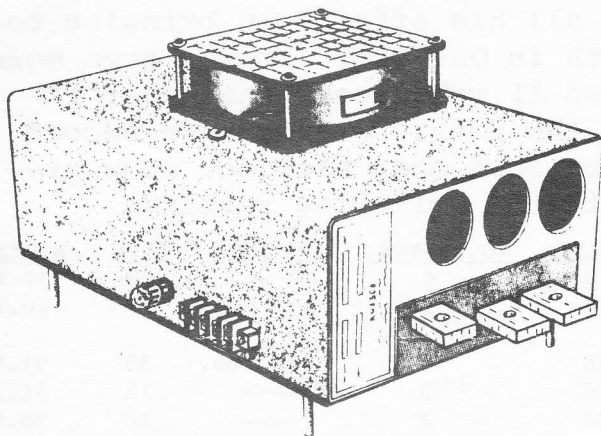
The 1986 DEVC Rally was held on September 27th on a route situated in the residential area northeast of Cinderella City shopping center in Englewood, Colorado. The rallying point was the Checker Auto Parts store parking lot at 111 W. Floyd. This was a new location as the previous Rallies have been held at the Northglenn Mall. Contact with the general public was somewhat limited as there was little traffic other than that at the parts store, but we did have a number of interested visitors. Following is a list of participants and the mileage attained. The course was described in last month's newsletter except that the south leg was moved one block north to avoid a construction zone.

VEHICLE	OWNER	DRIVER	NO. OF BATTERIES	MILES
Corvair	Tim Cutforth	Tim Cutforth	18	48.4
Gransee Special	David Gransee	Genny Clark	8	31.8
Mars IIR	Jim Closius	Jim Closius	12	27.2
Electrek	Unique Mobility	George Gless	16	15.2
Mars IIG	Univ. of Colorado	George Gless	12	14.2*
MGB/GT	George Gless	George Gless	8	9.8*
Honda Hybrid	DEVC	Not driven	9	0.0**

*Mileage not official as not completed before close of Rally (Note that both have 10 year old batteries)

**Not quite street legal yet.

SAFETY ELECTRIC VEHICLE CONTROLLER Model HV-500



SPECIFICATIONS:

- 100-500 AMP
- 24-120 VOLT
- 4000 HZ EFFICIENCY
- FULLY PROTECTED
- REGULATED COOLING FLOW
- SIZE — 4" D x 8" W x 12" L
(101.6mm x 203.2mm x 304.8mm)
- WEIGHT — 14.5 lb. (6.59 kg)
- FULL LINE OF ACCESSORIES
AVAILABLE

SAFETY FEATURES:

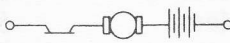
- NON-GROUNDED SYSTEM
- ACCELERATOR INTERLOCK
- SOFT-START ACCELERATION
- HIGH-VOLTAGE DISCHARGED
WHEN OFF
- OSHA YELLOW ENCLOSURE
- HIGH VOLTAGE WARNING LABEL
- AXIAL FAN GUARD

\$595⁰⁰

CALL OR WRITE FOR DETAILS

P.O. Box 3761
Santa Rosa, CA 95402

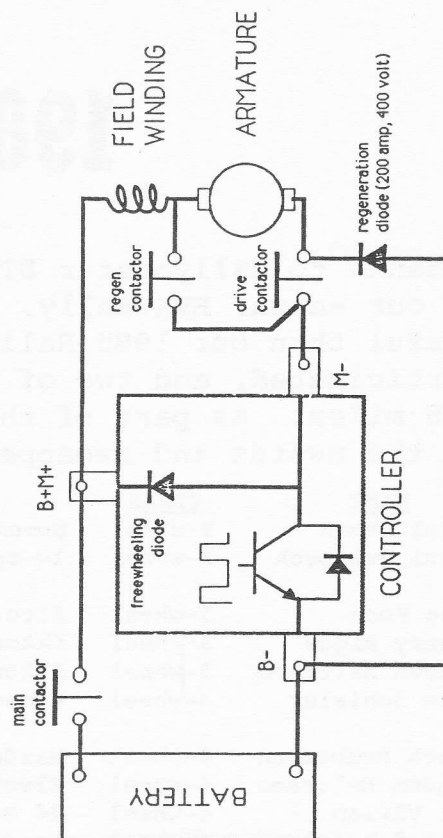
Telephone:
(707) 542-4151

RUSSCO 
ELECTRO-MECHANICAL ENGINEERING

4

REGENERATION WITH A SERIES MOTOR

CAUTION: THIS METHOD REQUIRES OVERDRIVING MOTOR. MOTOR MUST BE ABLE TO RUN AT HIGH SPEED WITHOUT DAMAGE TO ARMATURE. USE THIS CIRCUIT AT YOUR OWN RISK.



When drive contactor is closed, controller operates normally. But when drive contactor opens and regen contactor closes, controller excites field only, which causes motor to generate back emf. If back emf exceeds battery voltage, regeneration occurs through regen diode and freewheeling diode.

-Ric Barline
1986

1C - XR3524CP

Q1 - 1RF740 MOSFET POWER
Q2 - 1RF740 TRANSISTORS

CH - FILTER CHOKE

29 TURNS 2#14 WIRE
FERRITE CORE EC52
FERROXCUBE 3C8

T1 - DRIVER TRANSFORMER
80 TURNS 4#32 WIRE
FERRITE CORE 187
FERROXCUBE 3C8

T2 - CURRENT TRANSFORMER
SEC. 60 TURNS C.T. #32 WIRE
PRI. 2 TURNS C.T. #20 WIRE
FERRITE TOROID CORE 266CT125
FERROXCUBE 3B7

T3 - POWER TRANSFORMER
PRI - 24 TURNS 2#18 WIRE
SEC - 6 TURNS 2#13 WIRE
FERRITE CORE EC52
FERROXCUBE 3C8

PLEASE ADD THIS
TO John's DC to
DC circuit in
Oct. issue.

EV Marketplace

FOR SALE: 1969 OPEL KADETT L. FULLY ELECTRIC. Runs great- needs cosmetic work. \$3500 or trade for equal value. For more info CALL: (602) 778-3984.

FOR SALE: New 96V EV system for some Mazdas and Courier pickups. System adapts to 71-76 Courier PU. May also fit later models Includes Prestolite motor with all ready to bolt on adapters, PMC controller, Lester 96/12V charger, power relays, quick disconnect, plenty of 2/0 and 4/0 cable top quality rubber insulation. Will sell all for \$1400 or BO. CALL: (916)961-6892 or 388-3288.

FOR SALE: Gasoline Moped, one single motor electric Scooter, one two motor electric Scooter. Donated by Mr. Williams of Boise, Idaho. MAKE AN OFFER!! CALL: Chuck Olson (408)296-6944.

FOR SALE: 76 Audi-96 Volts- Complete W/Charger \$1200. P.O.Box 2032 Carmel, CA 93921. CALL: (408)624-4563.

FOR SALE: Converted 1970 NSU/AUDI to electric in 1975 milage 39752 with 11102 as electric. Motor G32-11 Aircraft Gen., Built in 600W Charger all for \$950. Paul Mauch, 1815 Walnut Dr. Mt. View, CA 94040. CALL: (415)968-1268

FOR SALE: 1981 Lectra Motors car, Cableform controller, Prestolite motor, Lestronic charger, radio. a give-away at \$988. Roger Smith, P.O.Box 16800 #273, Mesa, AZ 85202. CALL: (602)969-9667.

FOR SALE: 1972 Mazda RX2, 4 spd. trans., 30 HP 3600 RPM motor, 24-96 volts, 8-6V deep cycle batteries almost new, 48 volt charger, good body & interior. \$1250 OBO. Ernst Burns (714)679-1603.

FOR SALE: 1969 Toyota 4-door Corona. Good body, new upholstery, new tires, completely converted to electric. 30 HP Prestolite motor, battery pack, transistor controller (needs repair), Lestermatic charger. Asking \$1500. Dan Logue 2320 Broadview Ave. Ipland, CA 91786. (714)985-5496.

FOR SALE: Aztec 7, Fiberglass, gull winged, louvered back, 16 batteries, digital instrumentation, 2CM77 motor, MUST SELL!! any reasonable offer, (415)388-0838.

YEAREND CLEARANCE SALE!

WILLEY SOLID STATE CONTROLLERS

Model 8	Demo	360 Amp.*	\$295
Model 8/9	Rebuilt	400 Amp.*	\$195
Model 9	New	300 Amp.*	\$295
Model 9	New	450 Amp.	\$345

For all type D.C. motors. Specify volts.
*These include shunt field control option.
Write or call for details or to order:
F.G. Willey, 9722 Lindgren Ave.,
Sun City AZ 85373 (602-972-4838)

FOR SALE

G.E. factory engineering drawing of SOLARGEN AMC Electric Car wiring, showing Motor & EV 1 controller connections. Plus, an as-built wiring diagram for same. \$10 for set. Send check or money order.

3 each JET Electra Van "600." This five door accelerates quickly and maneuvers in all types of traffic. 76 cubic feet cargo space, G.E. 20 h.p.motor, G.E. controller, on-board charger, may need batteries. \$800 each/3 for \$2,000.

2 each G.E. 37 h.p. 120 volts series wound motors from FORD Fairmonts with 700 miles. Transmission adaptors included. \$400 each.

Joe Savino

496 Gillette Avenue
Bayport, NY 11705
516/363-6673 eve./wknds

FOR SALE: 1972 Fiat coupe. Two-Motor setup, controller available, 72V system, previously owned by John Martin. Winner of the 1983 Rally, very good condition, asking \$600. Leo Schatzl, CALL: (714)984-6000

ADS must be received with payment by the 10th of the month, for the following month's issue. AD rate is min. 1 to 5 lines \$5.00. 1/4 Pg. \$15, Full Pg. \$50.00, Full Pg. 2 sides \$80.00, WANTED - TRADE - FOR SALE, etc. Mail to EAA 1249 Lane St. Belmont, CA 94002

WHATS HAP'N

VANCOUVER REVISITED

On Tues. Oct. 14th I attended a meeting to establish a B.C. EV club, 16 of B.C.'s finest were present. north-westerners please attend the next meeting Wed, the 19th. of Nov. 7PM @ board rm. Transporama, 224 Front St. New Westminster, B.C. CALL George McCrae (604)987-7792 Eve.

Peninsula

Oct. 1st. Paul Brasch will speak on SOLAR POWERED VEHICLES.

INTERNATIONAL

IF YOU WOULD LIKE TO HAVE OUR INTERNATIONAL RALLY HELD IN YOUR AREA CONTACT CLARENCE NOW!! ANY EV ORGANIZATION IS ELIGIBLE.



PLEASE!! Send meeting info and Events by the 10th for the following month REPORTING INCREASES ATTENDANCE!!!

EAA Chapters

Call the contact person for meeting times and places.

ARIZONA: Phoenix

Roger Smith 602 969-9667
P.O. Box 16800 #273
Mesa, AZ 85202

OREGON: Willamette

Leslie Brundidge 503 - 387-3871
4040 Gary St NE
Salem OR 97303

CALIFORNIA:

Burbank

Irv Weiss 818 - 841-5994
2034 N Brighton #C
Burbank CA 91504

TEXAS: Houston

Ken Bancroft 713 - 729-8668
4301 Kingfisher
Houston TX 77035

East Bay

Scott Cornell 415 - 798-0909
60 Alan Dr
Pleasant Hill CA 94523

WASHINGTON: Seattle

Bryan Lowe 206 - 632-4496
5011 9th NE
Seattle WA 98105

North Bay

Gordon Schaeffer 415 - 456-9653
211 Bellam Blvd
San Rafael CA 94901

WISCONSIN: Milwaukee

Dave Parez 414 - 481-9655
3251 S Illinois
Milwaukee WI 53207

Peninsula

Mae Bensen 415 - 992-5453
8 San Juan Ave
Daly City CA 94015

NEW JERSEY: Hackensack

Kasimir Wysocki 201 342 3684
293 Hudson St
Hackensack NJ 07601

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Carl Metcalf 916 - 486-0321
3654 Bausell St
Sacramento CA 95821

Vancouver, BC

Bob Rickey 590-1188
7160 152nd St Surrey

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San Jose

Don Gillis 408 - 225-5446
5820 Herma St #3410
San Jose CA 95123

Southern CA EVA

Vic Schisler (714)842-9990
6841 Jardines Dr.
Hunt. Bch. CA 92647
Denver, CO DEVC
Genny Clark (303)451-5051

Santa Clara

Lee Hemstreet
787 Florales Dr
Palo Alto CA 94306

Fox Valley IL

John Stockberger
25643 Nelson Lake Rd.
Batavia, IL 60510
Eastern (215)696-5615
PO Box 717
Valley Forge, PA

For information on forming a chapter in your area write Electric Auto Association, 1249 Lane St. Belmont, CA 94002. For a sample copy of the newsletter send SAE #10 envelope.
PHONE (415)591-6698

EDITORS: - Walter Laski - John Newell - Bill Palmer - Paul Brasch - COMPILED AND PUBLISHED By Clarence Ellers. SEND IN YOUR PERSONAL AND CLUB NEWS AND COMING EVENTS. ARTICLES - COMMENTS etc. all correspondence to address below.

Electric

Auto

Association



NEWS

NOVEMBER 1986

1249 Lane St.
Belmont, Ca.
94002

Address Correction
Requested

NON-PROFIT
ORGANIZATION
U.S. POSTAGE
PAID
SAN JOSE, CALIF
PERMIT NO. 3021



HELP !!

EAA BASEBALL CAP
\$25 "RALLY" DONATION
787 Florales Dr.
Palo Alto, CA 94306

TIME DATED MATERIAL - DO NOT HOLD