

Electric Auto



NEWS

OCTOBER 1986

VOL. XVIII NO. 10



**Alternative
Fuel & Power Systems
For Transportation**



ON-SITE EXHIBITS

AUGUST 10-17, 1986



World class effort for a World class event!!

22 ELECTRICS joined the CANADIAN ELECTRIC VEHICLE EXPOSITION 1986, 16 OF THESE WERE EAA CARS. WE PROBABLY EXPOSED MORE PEOPLE TO EV'S THAN DURING ALL THE SHOWS WE HAVE DONE THE PAST 15 YEARS TOGETHER. THREE COUNTRIES & FOUR STATES WERE REPRESENTED, INCLUDING THE WORLD CHAMPION SOLAR CAR MEV1 FROM SWITZERLAND. See Pg. 4

CONVOY TO EXPO:

Five vehicles (3 gas & 2 EV's) drove and/or were towed from Santa Clara to Bellingham. Saied Motaei made three good runs 110 miles to Vacaville; 150 miles from Weed to 20 miles north of Grants Pass, this included 4300 ft. Siskiyou Pass averaging 50MPH; 90 miles Seattle to Bellingham; each run on a single charge and at freeway

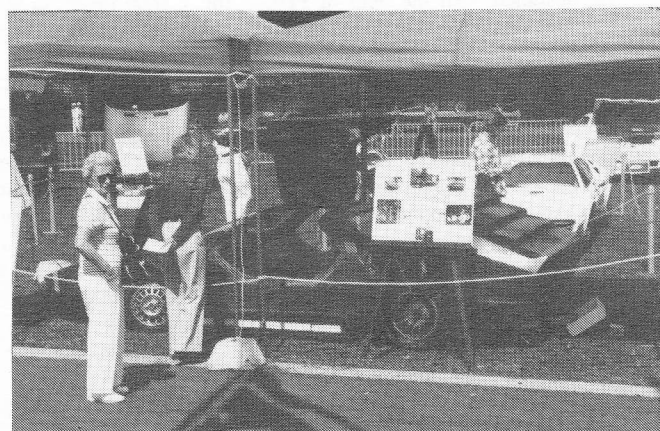
speeds. Saied also drove approx 200 miles Bellingham to EXPO and around Vancouver with some short time charging. this was with new batteries (no cycling) and no regeneration (failed) and no recirculation(not installed).

The enthusiasm, interest and help at our charging stations was fantastic!! Because of timing and one charging station that did not work out we could not drive Saied's car as much as we intended, four out of five is not bad for a first attempt.

The variac & diode system I discribed in the March issue worked perfectly, we used it on five differant cars up to 90 amps. The hard part was finding a 100 amp source. We learned a lot about cross country EV driving and I am sure we could do it again and drive all the way.

I thank every one who participated in this project.

Clarence



14TH ANNUAL E.V. RALLY

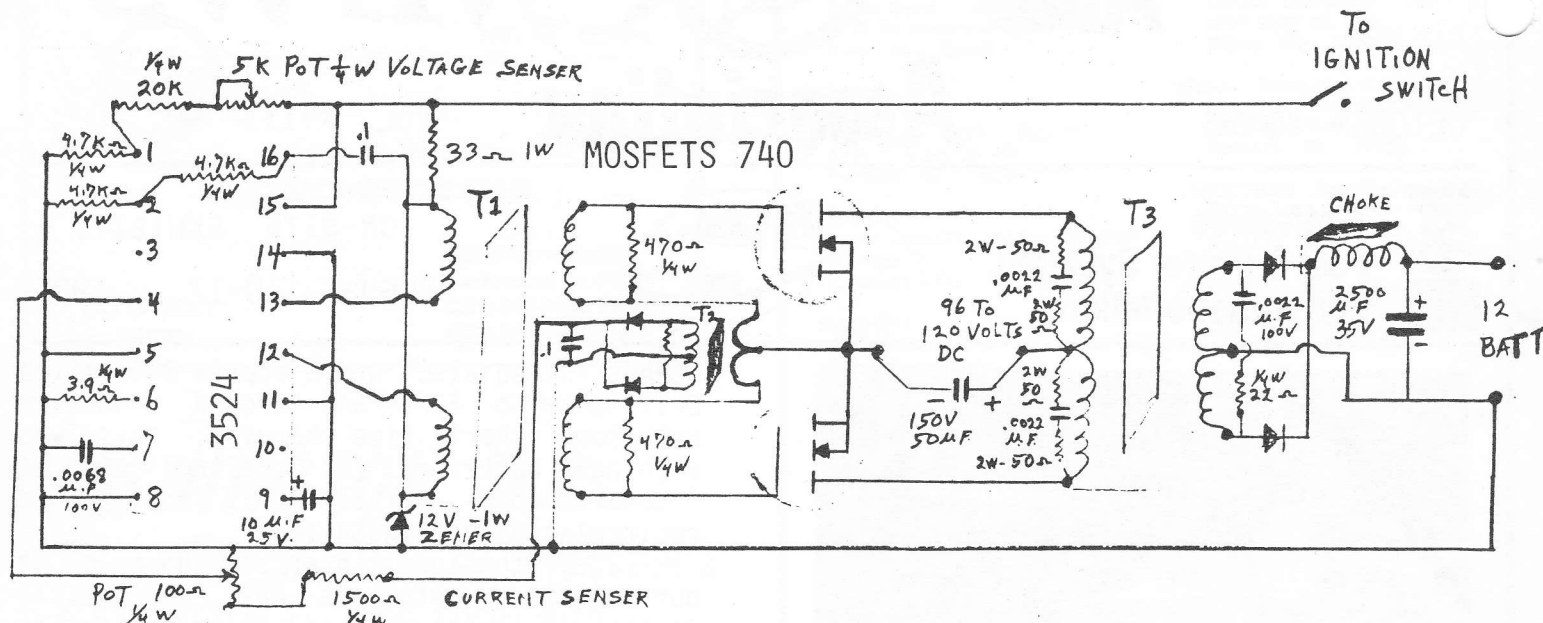
CUSTOM: Rick Barline 61.5, Don Gillis 45.1, Bob Steinfeld 41. Stock: Bill Williams 86.1, John Wasylna 45.1, Is Tillin 41. Miles per charge recorded at urban speeds under the new min. lap time rule. Complete results next month.

SYMPOSIUM Rally

SUNNYVALE

D.C. TO D.C. INVERTER

Input 72 Volts-130 Volts
Output 14 Volts-14 Amps



TRANSFORMERS: Toroid (doughnut) or I&E shaps can be used, must be ferrite or powdered iron. Bifilar wound for coupling, both windings wound each turn side by side.

REF: Motorola-Linear/Switchmode Voltage Regulator Handbook

John Wasylina
(415)462-3679

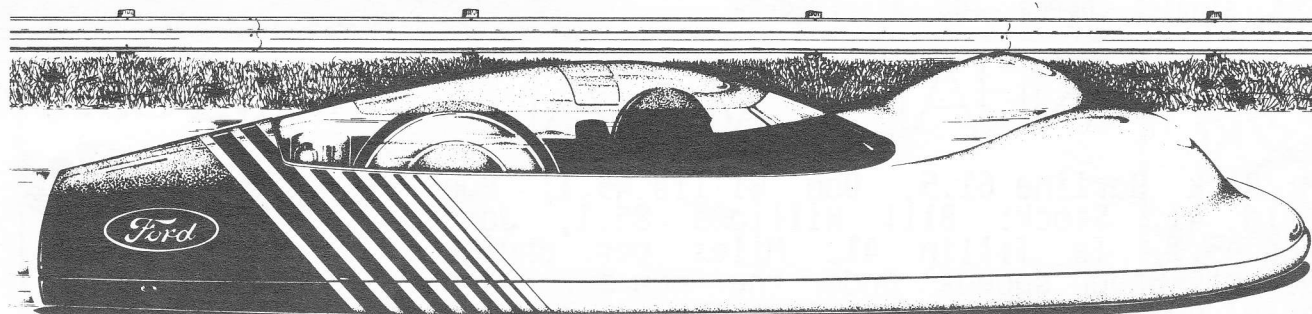
Tech News

Mileage Record

A Ford Motor Company research vehicle designed with the help of PDGS, the Product Design Graphic System, has established a new world record for fuel economy. Competing in the Shell Motor Mileage Marathon, the UF02 (Ultimate Fuel Optimizer) completed 10 miles of Britain's Silverstone Grand Prix Motor Racing Circuit at an average of 3803 miles per gallon. This represents a 21.5 percent improvement over the previous world record of 3133 miles per gallon. The single-seat, single-cylinder, aerodynamic three-wheeler is 10.2 feet long, 1.7 feet high, 2.3 feet wide, and weighs 64 pounds.

The UF02 was developed by engineers in Ford's transmission research department in their spare time. With the race only nine months away and the model shop taken up with other projects, the design team turned to PDGS as their only hope of meeting the deadline. The three-dimensional mechanical CAD/CAM system developed by Ford allowed them to dispense with a physical prototype. After key measurements had been taken and rough sketches made and revised, all the design information was entered into the system for refining. Recalculations of stress points and surface angles in the car's 15 sections, which would have taken months of work, were completed within four days.

PDGS is particularly suited to designing irregularly shaped curves and free-form surfaces. It can smooth lines using circular radii, standard sweeps, conics, or splines, while maintaining the original line as a reference. An infinite number of complex ruled and sculptured surfaces can be created without the designer having to worry about the length, direction, or number of points on the surface boundaries. Curves and lines can be rotated around an axis to develop tire envelopes or track side-glass movement. With the finite element modeling and review module, engineers can quickly analyze many designs before choosing the best one. PDGS is marketed exclusively by Prime Computer, Inc. of Natick, Mass.



GO WITH A WINNER!

ALCO BATTERIES - PMC CONTROLLERS

AT THE 1986 SUNNYVALE RALLY, 1ST, 2ND, & 3RD PLACE AWARDS WERE GIVEN TO CARS IN THREE CLASSES — STOCK, CUSTOM, AND LONG RANGE.

OUT OF THOSE NINE WINNING CARS:

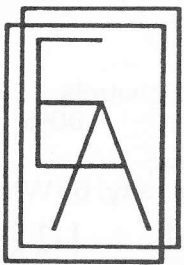
- * SIX RAN ON ALCO BATTERIES, **INCLUDING ALL THREE 1ST PLACE CARS.**
- * FOUR USED PMC CONTROLLERS, **INCLUDING TWO OF THE 1ST PLACE CARS.**
- * **THE CUSTOM CLASS 1ST PLACE CAR, A WHITE BRADLEY OWNED AND DRIVEN BY RIC BARLINE, WAS BUILT BY ELECTRO AUTOMOTIVE.**

AT ELECTRO AUTOMOTIVE, WE CARRY ALCO BATTERIES AND PMC CONTROLLERS, AS WELL AS OTHER HIGH QUALITY ELECTRIC VEHICLE COMPONENTS SUCH AS THE CHINA MOTOR, HEINEMANN CIRCUIT BREAKERS, AND WESTACH GAUGES, FOR ONE REASON ONLY:

WE WON'T SETTLE FOR ANYTHING LESS THAN THE BEST.

NEITHER SHOULD YOU.

ELECTRO AUTOMOTIVE



THE SYMBOL OF EXCELLENCE
IN ELECTRIC VEHICLE COMPONENTS
P.O. #1113, FELTON, CA 95018
(408) 429-1989



MEV1 with mobile solar cell panel

Power system

MEV1 is powered by two rare-earth permanent magnet motors that separately power each of the rear wheels. This saves the use of a differential that would only cause energy losses, increase the energy consumption and add further weight.

The electronic motor controls are of very advanced conception, with the use of MOS-FETs achieving an extraordinarily high energy efficiency.

One of the most important parts of an electric vehicle is the battery. In order to implement the concept of a lightweight electric vehicle, a high energy density battery is required. The weight of a common lead-acid battery with sufficient energy to guarantee a range of approximately 150 km would be roughly the same as that of our car. Its use would therefore require a much more stable and heavier construction and not be in line with our target.

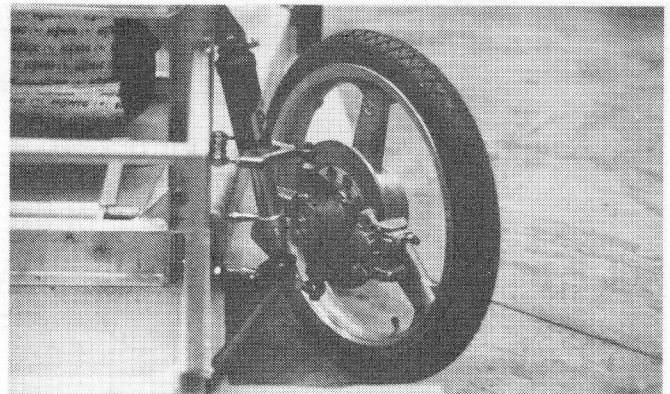
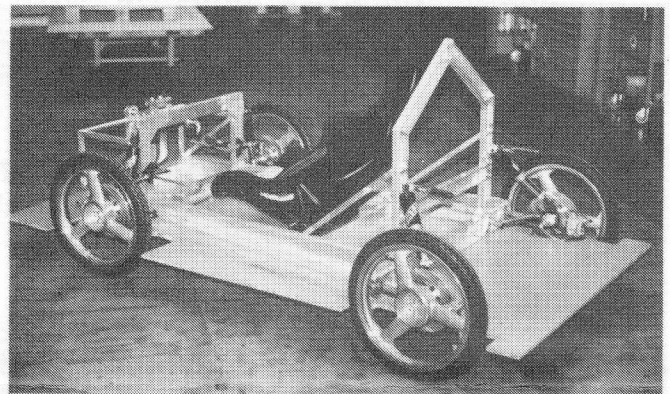
The battery used in MEV1 is a nickel-zinc battery and weighs only approximately one third of a common battery with the same energy capacity.

MEV1 wins the first Solar Powered Vehicle World Championship

On June 23, 1986 the first official Solar Powered Vehicle World Championship was started. The rally went through Germany and Switzerland and lasted six days. MEV1 was the clear winner in its category of prototype electric vehicles.

Experience has proven that the best way to power a vehicle by solar energy is not to install the solar cells on the car itself, but at a place where they can be exposed to the sun all day long. During the day the cells then recharge a battery which in the evening is exchanged with the discharged battery in the car.

Thus, although MEV1 has competed in the Solar Powered Vehicle World Championship, no solar cells were installed directly on the car. They were transported separately to the end of each stage, where the batteries were recharged.



MEV1 chassis front wheel and detail of brake and suspension design

Specifications of MEV1

Dimensions	length: 2.40 m height: 1.12 m width: 1.26 m
Top speed	above 100 km/h
Range	100–150 km
Weight	approx. 240 kg
Motors	two Samarium-Cobalt permanent-magnet motors nominal power: 2 x 3.5 kW nominal torque: 2 x 12 Nm

Motor controls	MOS-FET controls efficiency 90%
Batteries	nickel-zinc; energy density: 65 Wh/kg
Transmission	1st speed: 1 : 1.96 2nd speed: 1 : 3.90
Car body	fibreglass monocoque
Wheels	magnesium cast
Brakes	aluminium brake disc, dual circuit brake system

EV Marketplace

++++++
 FOR SALE: "MASERATI" Replica Aztec 7
 Fiberglass, gull winged, lowered back, 16
 Batteries, digital Instrumentation, 2CM77
 motor. MUST SELL!! any reasonable offer
 (415) 388-0838.

++++++
 FOR SALE: KARMEN GHIA 1965 CHEERY
 CONDITION. NEW UPHOLSTERY-NEW TIRES-NEW
 TORSION BARS-BALDOR MOTOR-ELECTRONIC
 CONTROLS-LESTRONIC CHARGER-COST \$5,000.00.
 WILL SACRIFICE FOR \$2,250. Gerald S.
 Rosenthal 5428 S 850 E, Ogden, Utah 84405,
 Call: (801) 479-9083

++++++
 FOR SALE: Electric Audi-Complete & In
 Working Condition. Picture & Details, John
 Duygou, P.O. Box 2032 Carmel CA 93921.
 CALL: (408) 624-4563-\$1200.

++++++

++++++
 FOR SALE: 1981 SCT ELECTRIC VW RABBIT,
 Diesel Heater, 120/240V Lester On-Board
 Charger, less than 2000 miles! Original
 price over \$16K, SELL for \$2800. CALL:
 1(518) 356-0700 after 7 PM EDT

++++++
 WANTED!! Person who understands permanent
 magnet motors, electronic switches
 (brushes), production prototypes, and
 practical battery applications. This person
 to assist me in development of a commercial
 EV. Plenty of hard work, little or no money
 now. Don Wasserman (415) 567-3200.

++++++
 BUILD YOUR ELECTRIC CAR CONVERSION TO GET
 100 MILES PER CHARGE. BUY THIS PRESTOLITE
 MOTOR \$400 & CONTROLLER \$275. 1980 DATSUN
 PU OR 1981 DATSUN 310 MAKE AN OFFER, NEEDS
 BATTERIES. Bill Kuehl 1(702) 645-2132.

—NOTICE!!—NOTICE!!—NOTICE!!—NOTICE!!—

WE WOULD LIKE TO LIST ALL THE ELECTRIC VEHICLES FOR
 SALE:

OPERATIONAL VEHICLES ONLY ONE TIME FREE LISTING!!

SEND BRIEF DISCRIPTION, NAME, ADDRESS, AND/OR PHONE
 DIRECT TO ME.

CLARENCE ELLERS
 2892 MESQUITE DR.
 SANTA CLARA, CA 95051

UNIQUE MOBILITY TAILORING ELECTREK II DESIGN FOR UK PROJECT TITLES AN ARTICLE
 IN *electricpropulsion* FOR AUGUST 1986 page 7. **UNIQUE** IS DESIGNING A NEW ELECTRIC
 CARGO VAN, INTENDED FOR A COMPANY IN THE UNITED KINGDOM. THE NEW VAN IS BASED ON A
 SUZUKI MINIVAN AND WILL INCORPORATE ELEMENTS OF THE ELECTREK I, PLUS AN INOVATIVE
 DRIVE SYSTEM AND OTHER NEW FEATURES.

THE SODIUM SULFUR BATTERY is the title of a book by J.L. Sudworth & A.R. Tilley. The 447
 page book is published by Chapman & Hall, 1985 This critical review is written by an
 acknowledged group of experts with firsthand experience. The book covers work done all over the
 world and describes in detail the principles of operation, design and manufacture, performance,
 safety and prototype demonstrations.

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. \$15.00, 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

NEW CHAPTER



NY - NJ - CONN.

TRI-STATE ELECTRIC VEHICLE CLUB

KAZ WYSOCKI
Director

293 Hudson Street
Hackensack, NJ 07601
(201) 342-3684 (Bus.)
(201) 343-1252 (Res.)

WASHINGTON D.C.

8th. INTERNATIONAL EV SYMPOSIUM &
EXHIBIT OCT. 23rd thru 26th.

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!!!

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

OCTOBER 1986

1249 Lane St.
Belmont, Ca.
94002

Address Correction
Requested

TIME DATED MATERIAL - DO NOT HOLD

EAA Chapters

Call the contact person for meeting
times and places.

ARIZONA: Phoenix
Roger Smith 602 838-5724
1930 So Westwood #39
Mesa AZ 85202

OREGON: Willamette
Leslie Brundidge 503 - 39-371
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 Perez 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

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

Vancouver, BC
Bob Rickey 590-1188
7160 152nd St Surrey

Non-Affiliated Groups

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

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